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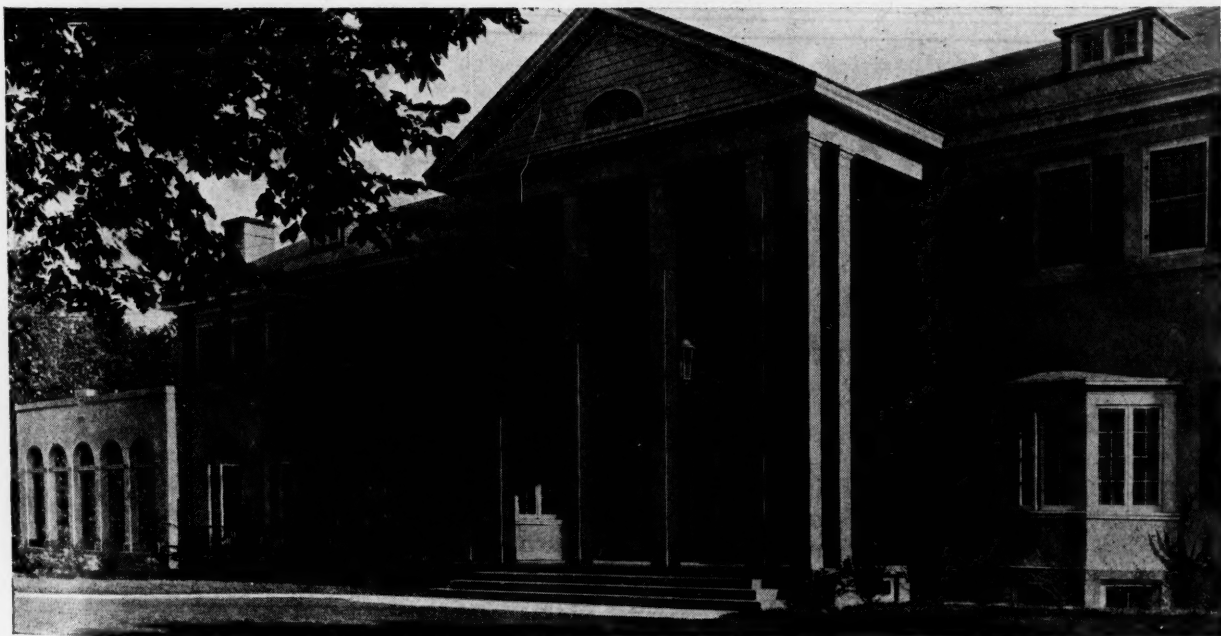
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Vol. XXIII.

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No. 4

Original Articles

*MODERN HEALTH EDUCATION IN THE PUBLIC SCHOOLS

ANDREW P. BIDDLE, M. D., F. R. C. P.

(Member of the Board of Education, City of Detroit.)

DETROIT, MICH.

Modern education in large cities means mass education. The complexities of modern life demand a broader vision for their solution. Play grounds do not naturally exist any more, they must be formed. The streets are too dangerous and lots not sufficient for the exercise of the multitudes of children; play grounds must be created. Means for proper exercise must be found.

The character of health education, as of all education, depends upon the ideals of human excellence which happens to prevail at the moment.

We live in an age of industrialism, of great nervous strain, of intensive activity, competition, and immense give-and-take. The man we admire most in a social order so characteristic is one of tremendous vitality, keen mind, ready hand, sound character, ideals, and ambition. One who can work hard, play hard, study, laugh, grow in tolerance and understanding, look at life squarely, and keep his balance is the one who has attained excellence, according to our standards.

It is hard to live under these conditions. Such a system makes big demands upon people in the way of mental and physical equipment.

The point is that the education process must be of such a character that it will develop men and women fit to take their places in the existing social order. At the basis of all these desirable qualities is *health*. Without *it* there can be no vitality, no perspective, no fun in living. The man without health is soured. He sees things out of their proper relationships; his disposition is

warped. He is lowered in efficiency. He is neither a good workman nor companion; citizen nor neighbor. Since health is one of the first essentials, health education must be a part of the school curriculum, and now, as always, has both its purpose and its method prescribed by the demands of society.

EVOLUTION OF HEALTH EDUCATION

What we know as health education today has had a long evolution. It is a descendent of physical education which, like so many of our educational forms and activities, was originally a European importation. It has gone through many ages.

The first educational system we know anything about—the Grecian—was fundamentally physical. Through games and exercises the Spartan and Athenian boys were inspired with the ideals of good citizenship and were trained for the highest activity of the time, participation in the affairs of the state. Nearly half of the school life of the Grecian boy was spent in sports and games.

GRECIAN METHODS

But the physical education of the ancient Greeks, their system of harmonious bodily development, health, and moral control had undergone the changes wrought by the monastic system of the middle ages. The change from pagan to Christian philosophy had necessitated changes in the educational system. To the early Christians the physical emotions were the creation of Satan and in direct opposition to the soul which alone was Godly. All education directed itself toward preparation for the life to come and since the body was diabolic, education took no regard of it except as an object of mortification. That is why the bodily torture continued to be so general all through the early period of our history.

In the ascetic atmosphere of the monasteries nothing in the way of physical culture could find encouragement. For many years, as a result, the only physical education in existence was that given to the sons of noblemen in the feudal system. This was

*Delivered under the auspices of the St. Clair County Medical Society to the Members of the Society, invited Teachers, Nurses, Dentists and others interested, Feb. 28, 1924.

essentially training for war, since, as you know, the chief occupation of the feudal knight was fighting. We regard the age of chivalry more as a bright spot of romance in the history of our development than as a source of educational ideas. However, something of the knights' physical training in altered form, it is true, did find its way into the system of physical education as it had developed at the time of its introduction into the United States. In fact, in the first phase of physical education in this country, military drill was held in high regard.

EUROPEAN

After the passing of the feudal system, war continued to be the chief occupation of nations. For its successful pursual endurance, sturdiness of body, sound health were most necessary qualities in the fighters. The Germans, under Jahn, developed their system of heavy gymnastics, with the idea of developing physically and promoting their health. After the German Revolution refugees carried their system to other countries and for a time it had enthusiastic followers.

Up to about 1830, the year in which physical education was introduced into the United States, the foregoing marked the main lines of development in Europe. In this country the European product was changed to fit conditions here. The first form of physical education, as I have said, was military drill, introduced by Captain Alden Partridge, into the military academies of his founding. For several years interest in his system ran high, but it died out after a time and the pendulum of public demand swung to the German system. By this time Beck, Follen, and Lieber, university trained refugees from Prussia, had introduced the Jahn system and founded the first public gymnasias in the United States.

AMERICAN

Two other forms of physical training held the stage for a short time during this first period—manual labor, and calisthenics for girls. Miss Beecher introduced the latter into her schools in Hartford and Cincinnati about 1828 and wrote a little manual which was used by teachers throughout the country long after her system had been displaced by those which followed.

In 1861, a man named Dio Lewis, established a Normal Institute for Physical Education in Boston. He had a system of "new gymnastics" which he exploited with much success during his life, but it was largely his own enthusiasm which gave it success, and when he died interest died with him.

Until 1880 there was little done in the way of physical education. There was no public demand for it. In that year, the third era was ushered in by the introduction of the Swedish, or Ling, system, into New England. This was a system of lighter gymnastics which found much favor in the schools, and for perhaps 20 years it spread rapidly throughout the country.

DETROIT

It was during this period that the Detroit schools added physical training to the curriculum. In 1891 a system based primarily on the Swedish was introduced. It was formal, consisted of gymnastic stunts, drill, and calisthenics of the earlier period, and was combined with a little physiology and hygiene.

All of these different forms of physical training were originally conceived as health measures. Each of their founders believed, with some truth, that the best way to good health and physical perfection was through exercise. Away from the inspiration of their founders, however, the exercises as they planned them lost much of their usefulness as means of development. They degenerated into mere forms of exercise and were valued in American schools solely for their disciplinary effect.

It was not until medical science had proved that there are more important essentials to health than exercise that the school movement took its modern form.

The first medical inspection of public school children was held in Boston, where so many of our progressive educational movements have started, during an epidemic in 1894. Its purpose then was merely to discover and select out those who were carrying contagion, but as the work progressed both the medical and teaching professions saw the value in going deeper and inspecting school children for hidden defects and disease. It was then that the distinction between health education, as we know it and physical education, as it was exploited, was made.

OBJECTS SOUGHT

Health education has as its aim the development of habits of healthful activity, both physical and mental. In that it differs from physical education which is based solely upon physical development. Health education has two distinct purposes:

- (1) The promotion of health, normal growth, and the development of the body as an efficient organism, and
- (2) Psycho-motor education (the old physical training idea) which emphasis on body control and character.

Physical education, as it was conducted

in the schools, was single in purpose and mental only in so far as it was disciplinary.

It was seen that physical culture would not accomplish the ends which were expected to be achieved. Changes in social and economic conditions alone completely annihilated the good effects of physical training.

Since 1900 there has been a gradual development of health education as a means of satisfying social demands for healthy men and women. The play movement, which started about that time, the contributions of the medical sciences, the new interest in the school as the instrument of society, brought about by the new philosophy of Dewey, stimulated by the psychology of Thorndike, and the experimentation of Courtis, the work of the school nurse and the medical inspector all stimulated health education in the school and changed the place of emphasis. The study of physiology and hygiene was greatly expanded. Teachers were trained to give instruction in physical education and it was made a part of each day's program. By 1910, in Detroit, and somewhat earlier in many of the eastern cities, there was a definite organization for physical education and a beginning was made in correlating it with other subjects.

The principle of the whole thing was wrong, though, as we discovered eight years later. We entered the war and the youth of the nation were examined for military service. To our surprise and great concern, one-third of those in the first draft were unable to pass a physical examination. We had assumed that because our children had learned about their bodies and had been taught how to care for them they were consequently healthy.

We realized then that knowledge is useless unless it is applied; that merely knowing the rules, without developing ideals and habits of health is not effective in producing healthy men and women.

Since then, health education, in its true sense, has displaced physical training in the schools. Health has been given first place among the seven objectives of education, not only because it contributes to personal well-being, but because it is essential to social progress. It is emphasized in all the school work, not just in health classes. It has become a fundamental, along with the ability to read, write, and figure.

Because it is through physical exercise, games, sports, plays, etc., that habits of healthful living are formed, the gymnasium, swimming pool, showers, athletic field, and outdoor play court are prominent features of the modern elementary school. There,

in the lower grades, exercises and games of a nature to develop the large muscular system and to establish the proper co-ordinations are given. For the older children there are stunts and exercises to develop athletic abilities and various skills. The fun they get in achieving proficiency in these sports gives them an attitude toward health habits that is of lasting benefit.

No boy can romp around the gym in the way these little fellows are doing without having enough enjoyment to want to continue to romp long after they have past the school age. These competitive athletics offer enough amusement to encourage continued participation in them. The thrill that comes of winning fairly and honorably, of being a good sport, is good not only for the soul but for the body as well, since it promotes the desire to enjoy the thrill again and again. Thus a healthful habit is formed.

HEALTH INSTRUCTION

More important than this physical training, however, is the general course in health instruction which each child in the first through the ninth grade pursues as part of his daily program. Without the knowledge and attitude toward health gained through the general course, exercise would be of little avail.

The general course is based on the following program:

- (1) A physical examination of all school children, for the purpose of discovering infection, disabilities, and hidden, but remediable defects.
- (2) Activities related, as far as possible, to the *individual needs of the child*. This is getting away from the unproductive and often harmful group activity which characterized our early system of physical training.
- (3) Co-operation of home and school in establishing health habits. Little can be accomplished if in their homes children are not encouraged to put what they have learned into practice.
- (4) School plant hygiene. This is an important feature of the health program.
- (5) Gymnasium, playground, athletic field, and swimming activities, which I have already outlined.
- (6) Corrective classes for the improvement of the curable physical defects, and
- (7) Stimulation of activities which are extra-curricular.

The aim is to bring before the children, "through experiences, observations, and reading, the basic elements of health and to instill in them an inner urge to do those things necessary to a healthful life."

COURSE OF STUDY

Recently a course of study was adopted and published in Detroit for the use of teachers in conducting health instruction in the schools. Based on the axiom that "longevity and an abundance of health is not

the result of two or three simple exercises, rules, or formulae, but of everlasting surveillance and instant stoppage of the numberless leaks in the reservoirs of health and the maintenance of a high level of energy and vitality," the new health course develops each of the divisions of a normal healthy life from the standpoint of nine contributing factors; food, rest, air, exercise, clothing, cleanliness, posture, leisure time, and qualities of mind. Further it aims to create such a feeling of personal responsibility for the pupil's own health that he will follow all the laws of health. It aims through direct health teaching and correlation with other subjects, to give the children of today a high regard for physical fitness that will carry with them throughout life.

The course is graded, each of the grades from 4 to 6 devoting its time to learning thoroughly the laws of two of the objectives of health. For instance, in the fourth grade, growth control and control of illness are the subjects of health teaching. The children learn the laws of normal growth, the part food, rest, air, exercise, cleanliness, clothing, posture, state of mind, and use of leisure time play in attaining proper growth, and how to build strength. Then they study ways and means of decreasing illness. Since freedom from illness is purchased largely by right habits of living, the thing to do is teach the children the true laws of health. They are taught that most sickness is preventable; that even a slight illness is costly in time, money, efficiency, and happiness; that every illness will leave the patient with lessened resistance to other illnesses. They prompt medical attention in case of sickness, and are taught many of the things necessary in nursing the sick.

In a like manner, the improvement of physical defects for the purpose of attaining to a maximum efficiency and happiness is stressed. Corrective classes are held and exercises, the nature of which is determined by physical examination, are given.

In this work the co-operation of the Board of Health is invaluable.

Our special interest is the Health Department work in the schools.

MEDICAL EXAMINATIONS

In an effort to safeguard and to promote the health of the children, the Detroit Board of Health offers to the schools, public, private, and parochial, nursing service, specialists for the diagnosis of communicable diseases, medical and dental service, nutrition classes, little mothers league classes, health talks, supervision of children in open air schools and open window rooms,

and special medical attention for the handicapped, including the deaf and partially deaf, blind or partially blind, and the crippled. In addition may be mentioned the sanitation of school buildings and the supervision of swimming pools.

In all 75 nurses are doing school nursing. Each nurse has an average of from three to five schools which she visits each morning. A few schools have only a two or three day service, and a very few are visited only once a week. With the exception of a small number of schools in our better districts, each school has a morning clinic conducted by the nurse. To these clinics come children who are not feeling well—with cuts or bruises, with suspicious symptoms of communicable disease—in short, all children whom the teachers wish the nurse to see, and in addition, all children who have been absent for two or more days on account of illness. Children with suspicious symptoms of communicable disease are sent home to await the arrival of the diagnostician who visits the home at the telephoned request of the nurse. In addition to holding clinics the school nurse makes room inspections, home calls on children who are sick without the services of a private physician, holds nutrition classes, and does the follow-up work necessary for the correction of physical defects found by the medical inspectors. Major contagion, tuberculosis, etc., are cared for by special nurses assigned to these various types of work. In 1921-1922 the school nurses made 40,405 home calls.

Each year those children who are found by weighing and measuring to be 15 per cent or more underweight are given complete medical examinations. Other children especially referred by the teacher or nurse are given such examination as may be necessary. This work is in the hands of 12 half-time physicians, divided into four squads of three each. To each squad is attached a squad nurse who does the clerical work and is responsible for the conduct of the examination. Last year, over 60,000 children were examined by the four squads. This year all children of the public schools have been tested for vision and hearing by the teachers. Those found to be defective are rechecked by physicians. In this way large numbers of defects have been discovered which otherwise would have gone unnoticed. Three half-time physicians are engaged solely in vaccinating and immunizing against diphtheria. Last year over 20,000 children were vaccinated and over 6,000 given toxin-antitoxin. Both physical examiners and immunizers travel from school to school on pre-arranged schedule.

The services of specialists for communicable disease diagnosis are invaluable. The diagnosis of communicable disease, both among children and adults, is in charge of eight regional diagnosticians. The diagnostician receives his calls from nurses, private physicians, and parents. He does not visit the schools, but makes his diagnosis in the home.

Seven schools maintain dental clinics. All of these are operated daily. Children in nearby schools are referred to these clinics for treatment when they cannot afford the services of a private dentist. Children from schools with no dental clinics in the immediate vicinity are referred to the Department of Health, where in 1921-22, 15,856 children were given dental attention. In the seven school clinics and hospital clinics during the same time, 19,835 children were treated, making a total of 35,691. Nine dentists operate exclusively in the schools, and there are six more in the central clinic. Four dental hygienists spend most of their time in the schools.

The nutrition classes are conducted by the school nurses under the direct supervision of a trained dietician and in co-operation with principals and teachers. The classes also have for their object the building up of positive health habits.

There are in addition to these health workers, specialists in various local departments who work with the special education department of the schools to make life easier for the physically handicapped by remedying their defects where possible. Before children are admitted to the special rooms or to schools for the handicapped, such as the school for the deaf, crippled, etc., they must be examined by these specialists.

SAFETY EDUCATION

Safety education plays an important part in health instruction. For several years the schools have been forced to consider safety teaching as one of their vital problems. The accident situation has become so acute that every public service organization has been recruited to help in alleviating the trouble. In Detroit, from the kindergarten through the elementary grades, systematic training in safe living is regularly given. The little tots in the kindergarten and first grades play games in which they learn traffic laws and regulations. They have miniature streets, marked out on their classroom floor, with semaphores, safety zones, tracks, etc., and they learn how to conduct themselves properly on them. In the higher grades, fire prevention, first aid, and accident prevention

are emphasized, and while acting as assistant traffic officers, the bigger boys and girls learn respect for law and order and become better citizens for being safe ones.

To be effective, this health instruction of which I have been speaking must extend to every child in the school system. That is only one of the reasons why the Board of Education so urgently presses the citizens of Detroit to approve the extension of the platoon and intermediate school systems and is trying so hard to replace the old, worn out school buildings now operating by new and up-to-date ones, where opportunity is offered each child to build up his body in the gymnasium, to learn how to preserve health, to form good health habits. It is only in a school which is equipped for health service that children can receive the education they need. In buildings that contain a gymnasium sufficiently large to care for 80 pupils at once every hour of the day, a playground, dustless, well cared for, and large enough to afford every child in school at least one out-door play period daily, an auditorium, where what they have learned in all of their classes can be synthesized and socialized, we feel sure that a more healthful, more enthusiastic, and more efficient group of pupils will be the result.

The Detroit buildings, planned as they are to serve the scientifically constructed curriculum, and not built of a pattern to which the curriculum is fitted after their construction is complete, adequately serve the first of the educational objectives. To us, modern health education is a real and personal thing. Two hundred and eighty teachers devote their entire time to it. Some 125,000 students are brought into daily contact with health problems and their solution. A supervisory staff of some dozen men and women, trained in their field, work constantly to improve the methods and subject matter of instruction. We are striving not only to serve the children, individually, by putting health, happiness, and the means of fulsome life within their grasp, but the community, and the nation by producing the best kind of citizen we know how. Health means morality, efficiency, social success. Health education, in its modern form, means the achievement of these ends. Therein is its justification.

In the motion pictures and slides which follow the activities outlined will be fully illustrated.

Acknowledgment is gratefully made to Arthur B. Mouhlman, Ph. D., Professor of Administration, School of Education, University of Michigan, and Head of the Department of Statistics and Reference, Detroit Public Schools, and to Mr. D. D. Cunningham, Assistant of Visual Materials, Detroit Public Schools, for valuable assistance rendered in the preparation of this paper and the exhibition by movies and lantern slides.

THE DIAGNOSIS AND TREATMENT OF TUBERCULOSIS GLANDS*

WILLIAM S. O'DONNELL, M. D.

ANN ARBOR, MICH.

The inception of tuberculosis occurs often in infancy and childhood. Observation of tuberculosis in childhood leads one to believe that treatment in the early forms of the disease often leads to satisfactory and permanent results.

Tuberculosis adenopathy can be divided into three main groups: 1. Hilus; 2. Cervical, and 3. Mesenteric, these being the important sites of lymphatic predilection of the tubercle bacilli in childhood.

Certain factors in making a diagnosis of tuberculosis apply to all cases. The history is of value in obtaining evidence of "exposure" to the disease. The cutaneous tuberculin reaction in a child up to two years is sufficient proof that the active form of tuberculosis is present. From this age upwards the importance of the tests diminishes and other signs and symptoms have to be sought and studied to establish the diagnosis of the active form of the disease.

Broncho or hilus adenopathy of tuberculous origin offers the most difficulty in diagnosis. The symptoms of hilus tuberculosis are less characteristic than those of pulmonary tuberculosis found in the adult. Cough is a less common symptom and hemoptysis is rare. Fever and a rapid pulse are associated with so many ailments in childhood that these signs are not often helpful factors in establishing a diagnosis. Loss of weight, or more particularly failure to gain in childhood are valuable signs of some existing underlying infection. The physical examination of the chest showing a positive D'Espine's sign is believed by many authorities to be evidence of an existing tuberculosis. But it must be remembered that if serial examinations are made following measles, whooping cough or repeated respiratory infections that this sign can often be elicited. The X-ray gives the most tangible evidence of the existence of hilus tuberculosis. The association of very large hilus glands with changes in the parenchyma of the lung are the most definite findings in this form of the disease. Making a diagnosis of tuberculosis on the presence of enlarged hilus glands alone is hazardous. Only on careful consideration of other existing factors, unaccountable fever, loss of weight or stationary weight and a positive tuberculin

reaction can we assume the existence of tuberculosis.

Fortunately the diagnosis of tuberculosis adenopathy in other regions does not offer the same difficulties. Enlarged tuberculosis cervical glands can always be easily seen or felt. The small node-like enlargements frequently found in children should not be considered. Enlarged cervical glands in children under two years are usually due to some acute disease other than tuberculosis. Other foci, the teeth, tonsils, ears, infections of the scalp, eczema and less often, sinus infection, should be excluded as sources of lymphatic enlargement. In acute glandular fever glandular enlargements usually affect the various lymphatic groups, cervical, axillary, inguinal and often the mesenteric group associated with fever and the constitutional symptoms of an acute infection. Lymphatic leukemia with adenitis is diagnosed on the blood findings. In lymphosarcoma there is usually great enlargement of the hilus glands and rapid progression of the disease from the onset to fatal and early termination. Hodgkin's disease is a rare disease in children. The blood picture offers some aid in diagnosis. Syphilis is not a common cause of large glandular enlargement in children. In difficult cases the microscopic examination of a gland can be used in making a diagnosis. It does not seem necessary to resort to this measure unless Hodgkin's disease or lymphosarcoma is suspected as the resulting scar of a biopsy always marks one, especially, among the laymen, as being tuberculous.

The important diagnostic signs in tuberculosis cervical adenitis are that the swelling comes on gradually, and at the onset there are no constitutional symptoms. Usually the swelling is bilateral and often one side is affected more than the other. The skin over the glands is movable. The glands increase in size slowly. If they are allowed to progress they become tender, and as the process becomes more advanced the glands become soft and break down. The skin then becomes adherent to the underlying structures, sinuses form and the glands discharge, leaving marked disfigurement. The extent to which the glands are involved and the progress of the disease, if untreated, is measured by the resistance of the individual patient, as in the severe cases of tuberculosis adenitis there is noticed more marked constitutional symptoms. The cutaneous tuberculin reaction is positive in these cases and the degree of the reaction seems to bear a definite relation to the severity of the process. In some of the cases it is

*Read before the Michigan Tredeau Medical Society, Flint, Oct. 3, 1923. From the Department of Pediatrics and Infectious Diseases, University Hospital, Ann Arbor.

difficult to get a history of exposure. In bacteriologic studies the bovine type of the organism is found. The milk supply is the most common source of this type of infection.

The chief factors in arriving at a diagnosis of tuberculous cervical adenitis are large cervical swellings usually bilateral, slow onset and progression, absence of a focus of infection, no constitutional symptoms occurring in a child over two years. It is important to establish an early diagnosis, as treatment at this time gives the most satisfactory and permanent results.

Mesenteric tuberculosis adenitis usually occurs in younger children. It is often in infants and children up to two years of age. It is probably a milk born infection in a large majority of cases, although coughing up and swallowing infected sputum, a common habit of childhood, from a tuberculous lung focus can cause tuberculosis with the resulting glandular involvement. It is often difficult to establish a definite intestinal focus in children under two years, the cutaneous tuberculin reaction is a great aid in establishing a diagnosis. When clinical diagnosis is possible, the abdominal tumor of tuberculosis adenitis is often as large as half an orange and can be palpated in the region of the mesenteric glands. In this form of tuberculosis in children up to two years of age, there is usually a marked constitutional reaction consisting of a marked loss of weight and secondary anemia. All degrees of tuberculous mesenteric adenitis occur in children. In the less marked form the same difficulty of diagnosis occurs here as does in the hilus type of tuberculous adenitis.

TREATMENT

The treatment of all forms of tuberculosis adenitis begins with the usual hygienic, dietary and rest regime used in the successful treatment of all forms of tuberculosis. All other adjuncts in treatment are only successful when these primary requirements are met.

X-ray therapy in repeated doses will reduce the tumor masses when used in the early form of the disease. This form of treatment is most efficacious in the group with cervical involvement. Treatment should be started at the time of early enlargement of the glands when only scattered small tubercles are distributed throughout the glands. When marked cessation is present, X-ray therapy is of little avail, as this type of gland quickly goes on to suppuration. Adherence of the glands to the overlying skin follows, sinuses are formed and surgical

intervention must be used to correct the condition when it progresses to this degree. X-ray therapy has no direct effect on the tubercle bacilli per se. But the destruction of the surrounding lymphoid tissue seems to establish an unfavorable pabulum for the further growth and dissemination of the organisms. Following up cases treated with X-ray therapy does not lead one to believe that the destruction of the gland with the X-ray leads to the dissemination of the tubercle bacilli to other organs of the body. With rigid general constitutional and X-ray treatment combined, successful results can be obtained in cases which an early diagnosis of tuberculosis is made.

The Quartz light should be used in the general treatment of tuberculosis. We know that from its use in the treatment of rickets that it causes an increase in the calcium and phosphorus content of the blood, and in the treatment of tetany with the Quartz light the lowered calcium content of the blood returns to normal. From this we deduct that the ultra violet rays have a general effect on the body chemistry and probably have a like effect on metabolism. The Quartz light does not act on the focus directly as does the X-ray. Therefore in treating with the Quartz light, its application should be made general, that is, over all parts of the body in order to get its maximum effect in the shortest period of time. The Quartz light deserves to be placed next to rest, diet and hygiene in the useful procedures that are known for the treatment of tuberculosis adenitis.

VON JAKSCH'S DISEASE, ANAEMIA INFANTUM PSEUDOLEUKEMIA

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This condition is here considered as a separate disease even though there is doubt that it is a definite clinical entity. It is, however, convenient to consider it apart from the other anemias. Von Jaksch's disease was considered with Banti's disease and Gaucher's disease as splenic anemias because of the association of anemia and marked enlargement of the spleen.

VonJaksch's disease is the most easily recognized of all the chronic splenomegalies. It usually begins between the sixth and twenty-fourth months, and runs a slow course. The cause is unknown. Many or all cases are rachitic and the name rachitic splenomegaly has been suggested as the proper one. It seems, however, that the

bony changes seen in VonJaksch's disease are the result, rather than the cause of the trouble. Several consider it is related to Banti's disease, but Sailer considers that the splenomegalies or splenic anemias of infancy should be considered separately, even though they are a rather indefinite group.

VonJaksch's disease is a condition of infancy associated with enlarged spleen, moderate or severe anemia, with leucocytosis and a high percentage of lymphocytes (as high as 60 per cent) but with all form of leucocytes increased. The leucocytosis and the type of leucocytosis are differential features of the condition. There is a reduction of erythrocytes, occasionally to one million, but usually not below two million. The hemoglobin shows greater reduction than the erythrocytes. Nucleated red cells and myelocytes are common.

About twenty-five per cent of the children die of complications such as pneumonia or diarrheal diseases. The remainder recover after prolonged treatment, usually several months.

VonJaksch's disease is usually recognized with ease from the age of the patient, the blood picture and the early splenic enlargement. Pseudoleukemias, pernicious anemia, Hodgkin's disease, and the leukemias are found in older individuals. Banti's disease begins at a later age and is not associated with marked splenic enlargement until a much later age. Secondary anemias are not associated with a marked splenic enlargement such as seen in VonJaksch's disease. Rickets can be differentiated by X-ray and blood-calcium and phosphorus if not by history and physical examination. The hemolytic icteruses can be differentiated by the longer course with associated jaundice and the history of other cases in the family (in the same generation) if it be of the familiar type.

I wish to show one boy that has passed through a typical attack of VonJaksch's disease and whose record we have for a period of five years.

H. E. M. was born May 27, 1917. He was admitted to the hospital April 8, 1918, but no history was obtainable. (I have been unable to learn anything of the feeding or other history previous to admission). At this time, age ten and one-half months, he weighed eleven pounds three ounces. He was unable to sit unsupported and could hold his head up only a few seconds. He was undernourished and had poor musculature. His skin was pale and lips pale and slightly cyanotic. No teeth had erupted. Slight enlargement of the cervical and axillary glands was noted. The frontal bosses were prominent and a groove present between the parietal areas. The frontanelle was large. The rib margins flared markedly and the ribs

were prominent. Dullness was found in the splenic area. The respiratory rate was 45 to 48. The heart rate was 132. The pulmonary second sound was accentuated. There was a systolic murmur heard over the precordium described as musical. It was heard loudest at the aortic region and was not well transmitted to the axilla or neck. The abdomen was very prominent and enlarged in all directions. The umbilicus protruded. The liver was easily felt one inch below the costal margin in the mid clavicular line. The edge was sharp and the surface smooth. The abdomen was slightly tense. The spleen was much enlarged, reaching to within one centimeter of the iliac crest on the left and to the umbilicus. The notch was felt just below and to the left of the umbilicus. The testes were present and there was slight scrotal oedema. There was also slight oedema of the ankles.

The blood Wasserman and ophthalmic tuberculin tests were negative. The coagulation time was prolonged beyond twice the normal (Duke's method). The erythrocyte count was 2,800,000. The hemoglobin was below 25 per cent. The leucocyte count was 20,600. The differential count showed polymorphonuclear neutrophile 25 per cent, eosinophile 3.5 per cent, lymphocytes 55 per cent, myelocytes 5 per cent, transitional 3 per cent, normaoblasts and megeloblasts were seen. Poikilocytosis and polychromatophilia were present.

The treatment was mainly symptomatic. Enemas were necessary on admission. His diet was confined at admission to cereals and milk but mashed vegetables and fruit were soon added. For three months green citrate of iron was given hypodermically on alternate days.

By August 22, 1918 (four months after admission), his blood count was 4,200,000 red cells, 10,200 leucocytes with 30 per cent polymorphonuclears and 70 per cent lymphocytes. In December his spleen was still two fingerbreadths below the costal margin and the liver was one fingerbreadth below. At this time his blood still showed a mild anemia. In February, 1919, ten months after admission to the hospital he was discharged to an orphanage as well. His blood count then was 4,925,000 red cells, 13,700 white cells with 59 per cent polymorphonuclears, 39 per cent lymphocytes and 2 per cent transitional. He has remained well until the present time.

At present he is a well nourished boy of six years and seven months of age. He has a few enlarged cervical glands. He has had his tonsils removed. His liver is palpable two fingerbreadths below the costal margin. Otherwise his physical examination shows no abnormalities. His blood count shows 4,320,000 red cells, 85 per cent hemoglobin, 9,600 white cells with 69 per cent polymorphonuclears, and 31 per cent lymphocytes. His neurological examination shows a moderate retardation, testing up to the fifth year. X-ray of the bones show no evidence of previous or active rickets.

The treatment of this disease is mainly symptomatic. The green citrate of iron is frequently used with varying results. The value of splenectomy has been discussed by W. J. Mayo and others. With our present understanding of the condition probably the general hygiene of the patient is the type of therapy most deserving of our attention.

From the Dept. for Clinical Investigation, Children's Hospital of Michigan. Read before the Detroit Pediatric Society, Jan. 1, 1924.

BLOOD TRANSFUSION

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Blood transfusion is a definite therapeutic agency indicated in a large number of diseases and after a stormy career has now become a simple procedure and not necessitating surgical skill. The addition of a portion of blood from one individual (healthy) to circulation of another who needs it under such conditions that the recipient may receive the benefit without disturbances therefrom, comprises transfusion.

Selection of a donor:

(1) The individual must be well and free from any contagious disease more particularly syphilis and malaria and must be well able to part with a quantity of blood.

(2) That his blood must be compatible with the blood of the recipient, i. e., no disturbance of patient's blood or donor's red cells will result inside the body.

The corpuscles of one species cannot be mixed with serum of another without profound disturbances although the serum of certain animals can be injected into man. Moss and Janski found that all human beings are divided into four groups in regard to the agglutination reaction of the red corpuscles and sera. In the test tubes as well as in the body the blood of each group is entirely compatible within the group, but incompatible outside the group.

Approx. Frequency	Red Cors. of Group	1	2	3	4
Group (1)—10%	Serum of group (1)....	0	0	0	0
Group (2)—40%	Serum of group (2)....	*	0	*	0
Group (3)—10%	Serum of group (3)....	*	*	0	0
Group (4)—45%	Serum of group (4)....	*	*	*	0

*—Agglutination. 0—No Agglutination.

Disease does not influence the blood group.

In newborns group not definitely established, and probably not up to six months, Iso-hemolysis present in about 20-25 per cent and usually occur only in presence of iso-agglutinins. Hence ruling out one rules out the other.

METHOD OF TESTING

Obvious method is to test cells of donor with the serum of recipient and cells of recipient with serum of the donor but this does not tell us to what group they belong, which is a convenience.

Emergency method, four drops of blood in one c.c. of a 1 per cent solution sodium citrate, a drop mixed with a drop of serum and put under microscope 30 min. should be allowed for reaction.

Stock sera of No. 2 and No. 3 kept to test unknown blood.

Brem modification of Moss method.

Ten to twenty drops blood collected in small test tube—allow to clot serum obtained after centrifuging, protective when used with own corpuscle; agglutinating when used with cells of another; two drops of blood collected in a one cc. of 1.5 per cent citrate in .9 sodium chloride equals about 5 per cent suspension.

Hanging drops made in slides.

One slide two drops of standard sera (agglutinating) with one loop cell suspension to be tested and one loop of protective serum (same blood as cells) one slide two loops of unknown sera (blood to be tested) with one loop of cell, suspension of known blood and one loop of its protective sera.

Readings under microscope:

Sera of recipient must never agglutinate cells of donor, but sera of donor may agglutinate cells of recipient.

VICENT'S METHOD

Determining Moss grouping:

Sera No. 2 and No. 3 kept as stock, one drop of No. 2 sera in one end and drop of No. 3 at other end. A drop of blood from person to be grouped is mixed with each of sera. Change may take place in 1-3 min.

Group Noted:

(1) If agglutination of corpuscles takes place in No. 2 and not in No. 3 the blood being grouped belongs to No. 3.

(2) If agglutination of corpuscles takes place in No. 3 sera and not in No. 2, the blood must be No. 2.

(3) If agglutination is noted in both No. 2 and No. 3 blood tested must be a group No. 1.

(4) If agglutination is not noted in No. 2 or No. 3, blood to be tested must be a io.

REACTION DUE TO INCOMPATIBILITY

When serum of recipient agglutinates cells of donor; but whereas only 20-25 per cent iso-hemolysis occurs where iso-agglutination takes place. Chances are good for no reaction of this type being far more serious than agglutination, nevertheless reaction of agglutination is to be avoided if possible. Haemolysis may be only slight, varying from a mild hemolytic jaundice and haemoglobin in urine. Some cases when first reaction was slight second became serious. Symptoms, restlessness, rising respiration and pulse rate, pain in back, vomiting and chill. Death on table or within 24 hours; majority however recover.

REACTION NOT DUE TO INCOMPATIBILITY

In some diseases as sepsis, blood seems to be definitely altered with production of

haemolysis and agglutination not normally present. Reactions common are probably due to instability of blood when removed, or protein intoxication; comprising rise of temperature, chill and skin phenomenon, lasting 1 hour to 24 hours or coming on later and lasting two or three days; more common when accompanied by anticoagulant; 35 per cent of citrate transfusion. Unger found cells more fragile and complement affected directly and indirectly by introducing a anticomplementary substance; also reduces functions of opsonins and phagocytic actions of white blood cells. Therefore transfusion of unaltered blood in anaemias and infections and transfusion of altered blood in haemorrhage to replenish impoverished circulation and stop haemorrhage and not for replacing pathologic blood with normal blood.

Robertson found some groups established in infancy and recommends compatibility being tested, also prefers unaltered blood by syringe canula method. Maximum amount in children up to 18 months, 15 cc. per pound weight.

GENERAL PRINCIPLES IN USE OF TRANSFUSION

To restore in part all the elements, to restore in part any element, and occasionally for stimulating effect or bone marrow. To restore in part all the elements the factors are the blood volume and the oxygen carrying constituents of the blood. Although volume can be made up with other substance no substitute for restoring red cells. The duration of effect depends on life of red cells, found to be as long as 40 days. Transfusion never performed to restore white blood cells, but may be used to restore platelets or stop a haemorrhage. Platelet duration about four days, repeated transfusions are necessary, and large amounts are necessary. If we transfuse only one-quarter of blood volume we raise the platelets by 50,000 and large numbers are being destroyed, also transfusions appear to have stimulating effect on bone marrow activity.

Now being more specific the uses of transfusions:

- (1) Secondary anaemias restoring cellular elements.
- (2) Haemorrhage diseases of newborn. Mortality reduced to 2.3 per cent, Robertson H. S. C., Toronto.
- (3) Did not find any value in Leukaemias, Purpura and Haemophilia and Von Jaksch's anaemia.
- (4) Benefit in Masasmus with secondary anaemia, acute-intoxication and respiratory infections with secondary anaemia. Robert-

son used exsanguination method withdrawing about 120 cc. and then beginning transfusion, giving amount up to 300-400 cc. His results in a few cases of severe burns which were showing marked Toxaemia (convulsions occurring) five out of eight recovered.

Any method should embody following requisites:

- (1) Blood must be out of the body a minimum length of time.
- (2) Passing through a minimum amount of foreign material.
- (3) Anti coagulants be avoided if possible.
- (4) Foreign materials should not be introduced not even na. cl.
- (5) Must be applicable in any case in any disease.
- (6) Must be possible to transfuse any amount with minimum reaction.

1. Direct or syringe canula method of Ziemson as improved by Linderman.

2. Citrate method of Lewisohn.

3. Intraperitoneal method of Siperstein.

First Direct. There is less reaction following transfusion of unaltered state of blood, 20 cc. luer syringes sterilized and liquid petrolatum sterilized run through. Expose infants veins at elbows or saphenous, needles unbevelled introduced into veins lower end tied off. Assistants fill one with blood and passes it to surgeon to introduce. When not giving blood syringe is filled with saline to keep needle free. One is emptying while the other is filling. Infants safe limit—80-150 cc. 15 cc. per pound of body weight.

Symptoms of hypertransfusion:

Cough (stop at this symptom), increased respiration, quick thready pulse, older patient's back aches and pains in legs.

Second Indirect Method, Citrate Method. Mayos lay stress on preparation of all tubing being used, first boiled then treated for 48 hours in a 15 per cent sod. hydroxide solution, then water run through for several days, also distilled water. Use the following proportions; sod. citrate 18 grs., water 60 cc., blood 460 cc.—1.5 per cent mixture.

Citrate is first run through tubing before blood is collected; with this preparation found fewer reactions and chills.

Third Intraperitoneal transfusion. Work of Siperstein and Sanzby, experimentally arrived at following conclusion.

(1) Intraperitoneal transfusion of citrated blood in rabbit is safe, simple and efficient.

(2) Absorption takes place rapidly. A rabbit can absorb 1/5 per cent of its own blood volume in four hours.

(3) Sharp temporary rise in blood values during absorption period followed by more permanent increase in blood picture.

(4) Autopsy findings considered with the blood counts would tend to show rise due to actual absorption and not a concentration.

(5) Pigeon's blood given subcutaneously does not enter circulation but intraperitoneally did rapidly.

(6) Therefore a true transfusion and not as absorption of nutrient material.

Conclusions in clinical cases:

(1) Intraperitoneal transfusion is a therapeutic procedure of possible merit.

(2) It can be utilized in cases in which transfusion is indicated where other routes are unavailable or impractical.

REVIEW OF LITERATURE ON BLOOD TRANSFUSION, 1923

Astrowe, P. S.: Hemolysis Following Transfusion, J. A. M. A. 79: 1311, 1922. Reports two cases, one in a child of eighteen months, the other in an adult, in which severe hemolytic reactions followed the second transfusion from a donor whose blood had proved compatible on direct test prior to the first transfusion. After the second transfusion the bloods proved incompatible on repeating the tests. The author concludes that iso-agglutinins and iso-hemolysins are weak. Mutual blood tests should always be supplemented by blood grouping, and tests should be repeated before each transfusion in children.

Cruchet, R., and Ragot, A. (Transfusion of Blood from Animal to Man), Paris med. 13:82, 1923. Reports preliminary experiments on animals showing that the blood of an animal of one species can be transfused in animals of another species without untoward results. Following this, transfusion of animal blood was used in 18 human cases (22 transfusion; sheep blood was used for eight cases, horse blood for 10 cases. Considerable reaction followed this procedure in some cases, which was, however, only temporary. There was definite improvement in the patient's condition in all but three cases.

Huck, J. G. and Peyton, S. M.: Study of Iso-Agglutinins before and after Ether Anesthesia, J. A. M. A. 80:670, 1923. Reports cross agglutination tests on 25 patients undergoing operation with ether anesthesia, before operation and at varying periods within the first twenty-four hours after operation. No changes in the blood groups was observed contrary to the findings of Levene and Segall. The authors conclude that blood transfusion within the twenty-four hours after ether anesthesia is safe if a suitable donor has been chosen previously.

Meyer, K. and Ziskoven, H.: (The Constancy of Agglutination Types in Man). Med. Klin. 19:87, 1922. In tests on 23 operated under anesthesia, treated with roentgen rays, radium or certain drugs, no alteration in the blood agglutination type could be detected. A general discussion of methods of blood grouping and its importance in transfusion.

BRIEF SUMMARY OF A FEW CASES IN THE HOSPITAL

Case 1. Haemorrhage Disease of newborn. Intraperitoneal method. Baby E. 2 weeks old. Seen March 21, 1923. Premature, 8th month, parents noticed it bruised very easily since birth.

History—Began to be fussy the night before and

this a. m. at 7, began to bleed at nose and throat. Breathing became difficult. Would stop breathing, eyes would roll up and baby would become limp, necessitating artificial respiration by the nurse.

Examination—Collapsed baby marked pallor icteric tint to the skin. Baby would take a few breaths or gasps then stop. Aroused only with difficulty and would breath regular for a short time.

Fifty c.c. Citrated blood from father given intraperitoneal. Remained much the same but picked up at first probably due to shock. About four or five hours later improvement began. Rise of temperature, breathing easier and took nourishment.

At 9 p. m. gave 30 c. c. intramuscular.

Had a good night, took nourishment from this on took feeding and went on to uneventful recovery.

Case 2. H. L., 5½ years old. Admitted 12-7-22. Discharged 1-9-23.

Diagnosis—Hamophilia peri-renal haemorrhage. Haemorrhage from operation wound (phlebotomy) complication.

cc. (1) Injury to side. (2) Blood in urine.

Two days ago boy slipped from lounge and fell against radiator valve striking his left side, following this he complained of pain in flank. Skin showed only bruising and discoloration. Blood was noticed in urine one day later and has increased in amount at each urination. No pain or frequency. Has become pale and weak and restless. Vomited night following injury, no blood. No blood in stool, no chill, no fever.

Past Illness.—Normal birth, full time child. Mother had moderately post partum haemorrhage. Baby bled from cord—not circumcised. Srotum had to be tapped. Cause?

Reasons—At birth he was yellow, persisted two weeks. Never rosy. Breast fed seven months. Feeding o. k. No infectious diseases. At thirteen months fell out of crib and bit his tongue, bled one day, healed over rough and clipped, and bled for four days. Transfused with father's blood, intramuscular and intravenous.

At two years scratched lip with coarse food and bled severely for one week and transfused.

Transfusions have been the only agents that have given results.

Patient has shown improvement in past year. Has had injuries with less severe results. Tooth knocked out with comparatively little bleeding. Has been treated by Doctors Abt. Hess, Sedgewick Cole Pierce of Chicago, Minnesota.

Family—Mother had Post Partum Haemorrhage. Maternal grandmother bleeder, otherwise negative.

I have spent considerable time on the history of this case because it is interesting and instructive.

HISTORY OF STAY IN HOSPITAL; EXAMINATION

Pallor—Black and blue spot on left kidney region and forehead, also many faded spots on legs and arms, no jaundice. Abdomen tender and pains, complains on motion of legs, pain in left groin.

Dec. 9.—Urine bloody. Haemoglobin 55 per cent. Red B. Cord count 3,450,000. White count 7,600. 69 per cent Polys.

Coagulation time 11 minutes, on the 30th, 18 minutes.

Transfused 85 c.c. blood. External jugular vein. 80 c.c. intra-muscular.—Father Type IV.

At noon, vomited blood clots and later about 125 c.c. fresh blood and at 5:30 direct transfusion 180c.c. elbow vein and haemorrhages ceased.

Dec. 13—No recurrence noted.

Dec. 17—Bleeding from arm began and stitches put in and later that day as he was still bleeding, given 55 c.c., unaltered blood intramuscular.

Dec. 19—Direct transfusion unaltered blood 400 c.c. Improvement marked and next day no bleeding. Temperature rose to 104, elevated about 36 hours. Wound became infected but no recurrence of haemorrhage up to day of discharge, Jan. 9, 1923.

SUMMARY TRUE CASE OF HAEMOPHILIS

Had internal haemorrhage following injury.
Transfused three times.
Urine blood cleared up in five days.
Ferile course up to time of large transfusion, Dec. 19, 1922.

Case 3. Baby M. M. Admitted Aug. 29, 1923. Still in hospital. Five months old. Infective diarrhea and vomiting. Weight seven pounds on admission. Six weeks duration.

Emancipated dehydrated—Pallor collapsed.

Sept. 5—General oedema.

Sept. 12

Oct. 7—Convulsions. Meningitis-toxic.

Oct. 14—60 c.c. citrated blood

Oct. 14—15 c.c. citrated blood.

Oct. 28—50 c.c. citrated blood.

Three more transfusions in November.

(Besides this, had almost daily intraperitoneal saline.)

Present weight, nine pounds. Result, good.

Case 4.—Baby B. T. Age 1 year, 4 months. Admitted October 26, 1923. Anaemia since birth. Has never sat up or made any attempt to stand, always very weak.

History negative, excepting mother anaemic and her mother anaemic—sent into hospital for this condition by Department of Health. Blood counts:

	Haemo- globin	Red Cells	White Cells	Polymorphs
Oct. 31.....	30	2,810,000	8,800	54%
Nov. 15.....	40	3,400,000	13,600	68%
Nov. 22.....	64	4,150,000	11,200	64%
Dec. 2.....	72	4,200,000		
Transfused Nov. 14—40 cc. Citrated Intravenously.				
Transfused Nov. 17—40 cc. Citrated Intravenously.				
Transfused Nov. 20—40 cc. Citrated Intravenously.				
Transfused Nov. 24—40 cc. Citrated Intravenously.				

Complication in hospital. Broncho-pneumonia Oct. 30; Purulent otitis media Nov. 12; Pus cells in one urinary sample.

Diagnosis: Rickets with secondary anaemia.

Case 5.—Baby E. G., 1 year 3 months. Admitted Sept. 22, 1923.

Supinating cervical adenitis. (T. B. C.)

Duration, 2 months.

Examination shows poorly nourished, anaemic, dehydrated. Baby weighs 11 lbs., 13 oz. Have no record of red cell count or haemoglobin on admission.

White count, 14,000; Polys. 60 per cent.

Oct. 24—80 cc. citrated blood intravenous.

Oct. 26—90 cc. citrated blood intravenous.

Nov. 2—85 cc. citrated blood intravenous.

Nov. 7—100 cc. citrated blood intravenous.

X-ray shows root infection which not considered to be TBC.

Since transfusion, has not gained in weight, but appears better; takes feedings well.

Last blood picture showed: Hb., 95 per cent; red count, 4,450,000; white count, 12,000; differential, P. M., 73 per cent; small L., 22; large L., 5.

Case A. C., age 6 years. Admitted June 8, 1923. Died Sept. 10, 1923, Purpura Haemorrhagica.

Healthy until 3 years old. Then had blisters which would disappear within a few hours. Purpuric spots. Subcutaneous haemorrhage. Black and blue spots, no mark left. Periods remission, 2 months, between when he is much better. Appetite, sleep and color much better. Past month worse. Eats and sleeps little, color more jaundiced, short of breath, apa-

thetic. Bleeds easily. Occasional vomits for last month. Treated by doctor for three years with iron, etc. Physically well developed, under-nourished boy of 6 years. Pale color suggests extreme anaemia, such as pernicious anaemia. Cryptic tonsils. Increased breath. Sounds over lower part of right chest posteriorly compared with left posteriorly.

Systolic murmur, filling time of entire first sound, heard all over precordia. Heard loudest over mitral valve.

Pirquet negative. Wassermann negative.

6-11-23—HBC. 31%; WBC. 6,400; RBC. 1,240,000.

6-15-23—HBC. 25%; WBC. 4,080; RBC. 1,180,000.

Transfusion intraperitoneal; 110 cc. citrated blood,

6-26-23.

6-30-23—HBC. 25%; WBC. 4,200; RBC. 1,200,000.

7-4-23—HBC. 27%; WBC. 3,900; RBC. 1,340,000.

7-11-23—HBC. 75%; WBC. 8,000; RBC. 3,700,000.

7-14-23—HBC. 28%; WBC. 4,000; RBC. 1,300,000.

8-1-23—HBC. 24%; WBC. 3,800; RBC. 1,210,000.

Transfusion. Direct blood transfusion 60 cc.

8-17-23—HBC. 25%; WBC. 2,400; RBC. 1,200,000.

8-23-23—Transfusion on 290 cc. Citrated blood intra-

venously.

8-27-23—HBC. 35%; WBC. 2,900; RBC. 1,760,000.

8-30-23—HBC. 26%; WBC. 2,200; RBC. 1,280,000.

9-4-23—HBC. 15%; WBC. 2,100; RBC. 950,000.

9-6-23—Transfusion Direct 39 cc.

9-9-23—HBC. 13%; WBC. 2,200; RBC. 760,000.

Blood picture and general condition showed a down-

ward grade until death, September 10, 1923.

From the Dept. for Clinical Investigation, Children's Hospital of Michigan. Read before the Detroit Pediatric Society, January, 1924.

THE DIET IN ANAEMIA OF INFANCY AND CHILDHOOD

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The experimental work on which this paper is based was done by Whipple, Robscheit and Hooper of the University of California and published in the American Journal of Physiology, Vol. 53. It will well repay a careful study. The work was done entirely on dogs. The dogs were made anaemic by bleeding one-fourth volume of blood on two consecutive days. Then various diets were used and the efficacy of each diet was determined by the length of time it took to bring about complete blood regeneration. Whether or not the findings can be applied to children's diets is somewhat of a question, although Gibson and Howard in Archives of Internal Medicine, Vol. 32, July 1, 1923, have confirmed the findings in part for humans.

No one has attempted to confirm them for infants and children, although Lucas and Hoobler (Transactions of Am. Ped. Soc. 1923) refer to Whipple's work and agree that dietary regime pays a most important part in blood regeneration.

Let me detail roughly some of Whipple's findings and see if we can find analogy in our common experience among children.

In general three types of diet were used. First, sugar diet; second, mixed diet; third, iron rich diets. All these diets were made up of sufficient calories to supply energy need.

Let us consider then the results of the sugar diet.

From researches of Whipple it seems fairly well established that a sugar diet has no power to regenerate blood cells or hemoglobin, in fact such a diet does not possess sufficient power to stimulate sufficient regeneration so as to replace the dying red cells which in itself requires considerable specialized protein building material both for the red cell stroma and for the complex hemoglobin molecule. On a sugar diet the proper materials are not brought to the cells for tissue building and blood regeneration often is less than is necessary to supply this wear and tear which constitutes about 3 to 5 per cent total cells every day if the thirty day life of the red cells in humans is accepted. (Ashley Jr. *Exp. Med.* XXIX, 263). Thus an anaemia may occur from no other cause than a failure to keep pace with the normal destruction of cells. Indeed a sugar diet is of less value than no diet at all, since it has been shown that during a fasting period more red blood cells and hemoglobin can be produced than on a sugar diet. In fasting, however, only such amounts of material are used up as will enable the individual to replace daily wastage of red cells. Thus in limited diets the body tends to conserve all the protein amino-acids necessary for the replacement of hemoglobin molecule.

Sugar diets are therefore the least powerful in stimulating blood regeneration of any of the known diets.

This is quite in keeping with the observed facts in the diets of infants and children. Recently an infant of six months was admitted to the Children's Hospital of Michigan, who had been fed practically from birth on a carbohydrate diet, and this infant showed a marked degree of secondary anaemia. We have further evidenced that a high carbohydrate diet is poor in blood regeneration powers. Many children are received into our wards (Children's Hospital of Michigan), who have been fed on patent foods which are notoriously high in carbohydrate. Many of these children show a marked grade of anaemia with no other apparent cause than the dietary factors. These children being free from infections or toxemias, but easily become subjects of infections, when exposed to cross infections. We believe therefore, that high carbohydrate diets contribute to the anaemias of infancy and childhood.

Group two—The mixed diet:

This was represented in Whipples Experiments, by bread, rice, potato and milk. On such a diet the blood regeneration took place slowly, providing the diet was sufficiently adequate to cause an increase in weight.

How reminiscent this diet is of the articles which make up the bulk of many a child's dietary regime. This represents a group of children who, while gaining in weight, yet seem to lack the energy usually exhibited by a healthy child. The hemoglobin of this group is fairly good (above 80 per cent), but the child is apathetic, has a poor appetite and does not enter into its daily regime with zest. On such a diet the blood regenerates sufficiently to replace the wastage of red cells, but is not able to completely supply the demand of the growing child.

The third diet used by Whipple is the "Iron rich diet," and consists of animal tissues containing iron. These are represented by calves liver, lean beef, beef heart and whole blood. These animal tissues are combined with a mixed diet of fat and carbohydrate and are capable of stimulating blood regeneration in at least one-half to one-third the time it takes on a mixed diet.

Empirically this has been used for many years, particularly by the German pediatricists in combating the anaemias. In Czerny's Clinic it was routine to feed calf's liver to anaemic children. It was prepared as follows:

The liver was thoroughly boiled, capsule stripped, the liver tissue passed through a sieve and then mixed with other food and fed daily. The water in which the liver was cooked is taken and used for cooking cereal. In America, beef juice, scraped lean meat patties, or scraped beef sandwiches are the favorite ways of serving the lean beef.

The heart of beef, next to calf's liver, seems to have a special power to regenerate blood cells and hemoglobin. This should be carefully boiled, shredded and fed in finely divided portions. (The common commercial meat extracts have no value.) On such an iron rich, vitamin adequate diet regeneration will take place from one-third to one-half quicker than on the average diet.

In the light of these researches and in view of their clinical confirmation, much more attention should be paid to the dietary treatment of the anaemias than in the past. We should not depend wholly on iron or arsenic or both combined, but together with these, study to supply an adequate diet rich in iron and vitamin. The blood transfusion is but another way of introducing such blood regenerative material into the system. The feeding of whole pigs blood in the form of "Blut Wurst" is quite common on the Continent. The feeding of these animal substances should be accompanied with vegetable and cereal diets also rich in iron,

and care should be exercised in seeing that there should be no vitamin deficiency. There is appended a list of the iron and vitamin content of a few commonly used food stuffs to assist one in choosing such a diet.

GRAINS OF IRON IN ONE POUND OF:

Orange	.014	Rice, brown	.141
Milk	.018	Raisins	.147
Beets	.042	Beef Steak	.155
Carrots	.042	Chard	.160
Lettuce	.050	Currants, dried	.174
Rice, polished	.062	Bread, graham	.174
Bread, white	.062	Bread, Boston brown	.210
Cheese, cottage	.067	Figs	.210
Asparagus	.070	Prunes	.210
Cabbage	.077	Eggs	.210
Macaroni	.085	Spinach	.252
Potato	.091	Oatmeal	.265
Bread, whole wheat	.112	Beef, lean	.272
Bread, rye	.112	Wheat, entire	.350
Peas, green	.118	Beans, entire	.489
Barley, pearled	.128	Bran	.546
Wheat	.546	Egg Yolk	.602

TABLE SHOWING SOURCE OF VITAMINS IN FOODS

Vegetables	Vitamin				Vitamin		
	A	B	C		A	B	C
Beet root	1	1	2	Wheat embryo	2	3	0
Cabbage, fresh	3	3	4	Wheat kernel	1	3	0
Carrots	3	3	2	Other Seeds			
Cauliflower	2	3	2	Beans, kidney	3		
Celery		3		Beans, navy	3		0
Chard	3	2		Fruits			
Lettuce	2	2	4	Apples	2	2	
Onions		3	3	Bananas		1	2
Parasnis	2	3	.0	Grapefruit		3	3
Peas, fresh	1	2	3	Grape juice		1	1
Potatoes	0	3	2	Grapes	0	1	1
Potatoes (sweet)	3	2		Lemons		3	4
Rutabaga	0	3	0	Limes		2	2
Spinach	3	3	3	Oranges		3	4
Cereals				Pears		2	2
Barley	1	3		Raisins		1	1
Bread (white)		1		Tomatoes	2	3	4
Bread (whole meal)	1	3		Dairy Products and Fats			
Maize (in yellow)	1	3		Butter	4	0	0
Oats	1	3		Cocoanut oil	0	0	0
Rice (polished)	0	0	0	Cod liver oil	4	0	0
Rice (whole grain)	1	3	0	Cheese	2	1	
Rye	1	3	0	Cream	3	1	
Wheat bran	0	1	0	Eggs	4	2	0
				Milk (whole)	3	3	2

- 4—Indicates very abundant.
3—Abundant.
2—Relatively large.
1—Present in small amount.
0—Absent.

This table is adapted from "The Vitamin Manual" by Walter H. Eddy, associate professor physiological chemistry, Teachers' College, Columbia University, New York City.

From the Dept. for Clinical Investigation, Children's Hospital of Michigan. Read before the Detroit Pediatric Society, Jan., 1924.

BLOOD COAGULATION

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There have been many theories explaining the coagulation of blood. Most of the workers on this question have used their own nomenclature and as a consequence the literature is deluged with a host of names for the same substance. I will try to use one term for each substance throughout as far as it is possible to do so and thus avoid confusion.

The theory most commonly accepted is that given by Howell (1). Briefly stated, it is as follows: Prothrombin, which is present in the blood, is acted upon by calcium to form thrombin. This reaction does not occur in the vessels, because of the presence of antithrombin.

In shed blood, the tissue cells of the blood, i. e., the platelets, furnish a thromboplastic substance which neutralizes the antithrombin and permits the calcium to react with the prothrombin to form thrombin. Thrombin reacts with fibrinogen in the blood to form fibrin (clot).

The thromboplastic substance, often called thrombokinase, is also found in various body tissues.

Mills (2) has a very interesting theory on the coagulation of blood which is based on that of Wooldridge.

According to this theory there are two fibrinogens (protein phospholipin compounds): (1) Tissue fibrinogen (thrombokinase) with an iodizable H or Na and therefore negatively charged in neutral solution; and (2) blood fibrinogen, also negatively charged in neutral solutions having an H or Na ion.

With the two together fibrin is formed by replacement of two H or Na ions, one from tissue fibrinogen and one from blood fibrinogen, by a Ca ion, giving fibrin.

This is analogous to the precipitation of other negatively charged colloids by bivalent metals.

Mills found that tissues in which hemorrhage is likely to be most dangerous possesses the richest stores of tissue fibrinogen—an effort of nature to control accidental hemorrhage. In the liver, however, it is difficult to control hemorrhage and yet it is rich in tissue fibrinogen. This is apparently due to the phospholipin fraction, for if this is removed by the use of benzene and that from the lung is substituted coagulation results.

The literature abounds in very recent contributions by such men as Vines (3) (4), Loeb et al (5) (6), Nisson (7), Mills (8), etc., but none have as yet actually solved the problem.

SLOW COAGULATION

The average normal coagulation time is about nine minutes, and the surgeon usually shows concern when it goes above ten minutes. It is because of slowed coagulation time in various conditions that we are particularly interested from a clinical viewpoint in blood coagulation. It is of interest to note that Falls (9) has found that fetal blood at the time of birth gives practically

the same coagulation time as that of the mother. Rodda (10) has gone further and shown that there is a prolongation of coagulation time in the new born and a gradual return to the average normal by the tenth day following. This point may be of value in a study of hemorrhage of the new born.

There have been many methods in vogue for taking the coagulation time, most of which can be found in the textbooks. The chief source of error in most of these methods has been due, I believe, to the temperature factor, because a difference in temperature causes a definite and marked change in the coagulation time. Very recently a new method was suggested, and because it is quite simple and apparently reliable, I will state it in brief (11). A capillary tube about one and one-quarter inches long with a 0.6 to 0.8 mm. inside diameter is used. The second drop of freely flowing blood from a stab wound is used and a quarter inch of the tube is left unfilled. The tube is held in a crease of the palm, with the hand closed. The hand is opened slightly and the tube inverted about every half-minute to note the end point.

When we consider the causes of slow coagulation, we enter a rather speculative field.

In general we can say that there is a lack of some substance in the blood essential to coagulation. There must of necessity be a disturbed relation somewhere between prothrombin, antithrombin, calcium and thrombokinase.

Howell believes that in hemophilia it is due to a relative preponderance of antithrombin. The antithrombin may be normal in amount or absolutely decreased, but on account of the absolute diminution of the prothrombin there is a relative increase in the factors that delay the coagulation of blood. According to Buchmann (12) the hemophiliac has normal platelets, but they do not seem to yield their thrombokinase. Bedson (13) has shown that removal of the platelets (thrombokinase) from the blood is one of the chief factors in the production of experimental purpura.

It is a well known fact that citrated blood does not clot—probably because the calcium is changed to a non-ionizing state; but if calcium be added to this blood to a certain concentration (up to about 18 gm. per liter) it will clot, though not at a higher concentration.

We also know that thrombokinase from tissue substances definitely hurries clotting (14).

Diseases characterized by slow coagulation:

The conditions to be considered from a clinical viewpoint are: Hemorrhage of the new born, hemophilia, the purpuras, and traumatic hemorrhages.

I will not go into a consideration of the symptomatology, etc., of these conditions, for you are all familiar with them, and for purposes of review they can be found in any standard text book. I will endeavor to give you the most recent methods of treatment and possibly suggest some new paths for further efforts. The only purpuras with which we need concern ourselves in this paper are purpura hemorrhagica and purpura fulminans. Under traumatic hemorrhages our concern is with concealed hemorrhages, e. g., traumatic hemorrhage of the new born, or concealed hemorrhage during surgery and following an accident. We should keep in mind the fact that intracranial hemorrhage is frequently a local manifestation of a general condition and is not necessarily associated with trauma during parturition, although it is nearly always attributed to that (15).

TREATMENT

Generally speaking, drug therapeutics is of very little value.

Epinephrin has been used with very doubtful results. In using it, we must remember that it is very powerful and may aggravate the condition by damage to the small vessels. It has been used with good effect in hemorrhage of the new born, being injected by way of the umbilical cord.

Gelatin has some advocates for use in hemorrhage of the new born.

Calcium lactate, about 20 to 30 grains a day, has given some results, but has been shown to be of little value as an emergency drug (16). The administration of calcium salts according to Lapenta (17) is irritational because it has been proved that an increase of Ca ions in the blood beyond the physiological point prevents coagulation, and cases of diminished coagulability due to the deficiency of calcium are rare. It has been shown that the administration of sodium citrate intravenously, intramuscularly or subcutaneously results in prompt and pronounced shortening of coagulation time (18). This lasts definitely for about three hours, and there is a return to normal in from twenty-four to forty-eight hours.

As a possibility for further development we must consider the X-ray also, for it has been shown that raying of the splenic, hepatic and intestinal areas results in a diminution of the clotting time (19).

But our mainstay thus has been the administration, by various means, of the different substances conserved in coagulation—the use of the thromboplastic substances. Of these, the best so far is transfusion. Besides supplying the needed elements in a natural way, we make up for the loss of blood due to hemorrhage. Buckman (12) states that transfusion of fresh, unmodified normal blood supplies platelets (thrombokinase) to help restore the normal process of coagulation. Falls (20) states that transfusion of citrated blood in hemorrhages is not always available, and for patients over six months of age we must consider the necessity of obtaining blood that falls in the proper group. Weil (21) advises against subcutaneous injection of whole blood on the ground that the clot acts as a foreign body and often causes subsequent hemorrhage. He also states that transfusion can be used on occasion for emergency, but not repeatedly.

Our next best method is serum treatment. This is efficacious in hemorrhage when it can be used locally, by ingestion in gastric hemorrhage, intravenously if it is human serum, or intramuscularly.

Weil (21) has a preventive treatment for hemophilia, as follows: 20 cc of serum, either human or animal, is given every two months or at the very least every three months. He finds that the rectification resulting lasts for six weeks to two months and that the anaphylactic reactions are usually small and not important. He has several cases which have not been treated for years and have had no hemorrhage since treatment.

Commercial thromboplastic substances are of two types; those made from tissue substances and those made chiefly of blood elements.

Mills (14) has shown that tissue extracts accelerate the clotting of blood in a very definite manner. The active tissue substance will not react with the blood fibrinogen to form fibrin except in the presence of soluble calcium salts. If injected intravenously, rapidly and in sufficient amount, tissue extracts cause intravascular clotting and death. Injected slowly and in smaller amounts, the blood is rendered partially or completely non-coagulable. This non-coagulability apparently depends on the gradual removal of the greater part of the fibrinogen of the blood stream.

The active principle of tissue extracts (22) is in part protein in nature, so that removal of protein reduces the activity of the material which consists of 41.6 per cent phospholipin and 58.5 per cent protein. On

separation they lose their activity. Addition of phospholipins to the active material as it exists in the lungs increases its activity fourfold.

In working on cephalin, Gratia and Event (23) have shown that a mixture containing 65 per cent of pure cephalin has a marked accelerating effect on the coagulation of recalcified oxalate plasma.

Commercial examples of such thromboplastic substances are: kephalin, thromboplastin, coagulin. These substances shorten coagulation time to approximately one-tenth, e. g., from ten minutes to one minute. The tissue extracts which Mills (24) found to be most active are, in the order named: lung, kidney, heart, brain, spleen, thymus, testes, skin.

But, in using these substances, we must always keep in mind the fact that if given intravenously they often produce intravascular clotting, with resulting death.

Examples of products made from blood elements are coagulose and hemostatic prothrombin.

Hemostatic serum (17) is probably the better agent of the two. It depends for its activity on prothrombin and thrombokinase, natural ingredients of blood serum, and anti-antithrombin, a biologically developed product.

Serums administered intravenously have, apparently, no direct coagulating effect upon the blood. They seem to be incapable of overcoming the fluidic balance of the circulating blood, though they contain two of the elements that are involved in the physiologic mechanism of blood coagulation, and one of them (hemostatic serum) contains a third element which certainly assists in the coagulating process, though it is not demonstrably present in normal blood. Another element involved in blood coagulation is present in the blood of the patient, namely the calcium; but still there is one factor lacking, one that is conditioned upon actual rupture of the blood vessel. It is presumed that, until such rupture occurs, the anti-antithrombin introduced into the blood when hemostatic serum is injected is offset by the presence and continued formation of antithrombin in the blood, but when a break in the continuity of the blood vessel occurs the tissue thrombokinases thus liberated turn the scale, so that coagulation takes place at this point only. This, of course, is what occurs normally; and to bring abnormal blood up to the normal level without violence, a serum product should be used, if any, that will simply accentuate or strengthen the coagulating potency of the

blood, having no direct thrombotic or coagulating effect.

The question naturally arises: "How is the activity, and hence to a certain extent the reliability, of tissue extract and other coagulants determined?" Some are tested in vitro, where the conditions are manifestly not the same as those which attend actual hemorrhage; and others, notably hemostatic serum (25), are tested by administration to animals after the average clotting time of the animal's shed blood has been learned by means of tests made with several small specimens drawn at brief intervals and timed in the test tube to a point where the tube can be inverted without showing more than a trace of fluid blood. The coagulant is administered intravenously, and on subsequent withdrawal of blood the clotting time of the specimens is noted in comparison with the natural average clotting of this particular animal, as previously discovered. Precautions are taken to avoid the possible action of blood film in the test tube, or stimulation of the clotting process by fortuitous circumstances of any kind. Concurrent results from the use of blood drawn from different animals of this same species enable the expert to secure what may be considered accurate data as to the reliability of the tested coagulant—provided it can be counted on to remain unchanged in the marketed packages for a reasonable length of time.

This brings us to the second question—the permanence of commercial coagulants. Some of these are quite active at first, especially when applied directly to the bleeding point, but soon part with their peculiar properties, so that their use in practice is always problematical. The permanence of natural blood serum in liquid form is a matter of a few weeks, or months at most; but the desiccated whole serum (coagulose) is more permanent; and hemostatic serum perhaps because of the anti-antithrombin it contains, retains at least a fair proportion of its activity for three years.

It is to be remembered, of course, that the effectiveness of all coagulants is restricted by the fact that they do not influence the tone of the blood vessels, but only the chemico-physiologic properties of the blood. Post-operative bleeding will sometimes persist notwithstanding the use of active blood-coagulating agents. The avenues of escape for the following blood are too considerable to be closed by clot formation. An arterial tonic may be required.

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GASTRIC OBSTRUCTION

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Gastric obstruction, gastric retention, and decreased motor power of the gastric walls are conditions which, too frequently, are classed as synonymous, and definitely regarded as surgical. It is my purpose to point out the more exact methods of diagnosis in differentiating organic gastric obstruction from gastric retentions, altered gastric motility, hypersecretions, gastrosu-corrhae, gastrochronorrhoe, and extra-gastric conditions affecting motility. There are also many pitfalls and fallacies encountered in the interpretation of symptoms and physical findings which have led to error in the diagnosis and treatment of gastric obstructions.

The causes of true organic obstruction may be conveniently classed as extra-gastric and intra-gastric; and each of these may be further classed as malignant or benign. The most common extra-gastric obstructions are due to tumors and inflammatory swelling with resulting adhesions, within the bile-tract, pancreas, liver and small and large intestines. The intra-gastric obstructions are usually due to peptic ulcer, carcinoma, syphilis, tuberculosis, fibromatosis, polycystic tumors, sarcomas, hair-balls, or adhesions resulting from many of the fore-mentioned conditions. For the purpose of clearness and to avoid misunderstanding, I shall omit from this paper a discussion of obstructions at the cardiac orifice and esophagus, and also congenial pyloric stenosis of infants.

Obviously, one is first concerned with determining whether true obstruction exists before diagnosing its exact location and cause. Fortunately, there are several very good methods at our command if we interpret them properly:

- Vomiting and vomitus.
- Succussion signs.
- History of peristaltic waves and weight loss.
- Thirst and small stools.
- Visible peristaltic waves (natural or induced).
- Fasting gastric residuum.
- Ewald Test Meal.
- Rehfuß Fractional Meal.
- Seven Hour Food Motor Meal.
- Salol Test.
- X-ray.
- Exact and complete neutralization of gastric acidity.

When in doubt as to the type of vomiting or the kind of vomitus, give the patient food and drink and produce vomiting. Cumulative vomiting is that which occurs after the stomach should be empty normally. With a mixed meal, the stomach should be empty in seven hours. If the patient gives a history of vomiting more food than was eaten at the time of the last meal or if food is vomited which was eaten the day before, it usually means organic obstruction. Such vomiting, however, may occur with a dilated, flacid, atonic stomach, following any strong emotion, such as fright, anger, or sorrow, vertigo, and other conditions. If this type of vomiting occurred regularly at definite intervals, independent of the above conditions it would be diagnostic. Or if with this vomiting, we found the vomitus to contain blood or sarcinae, yeast, *Op-Boas* bacilli or lactic acid, and perhaps accompanied by visible peristaltic waves—then the diagnosis would be certain. This point, I wish to emphasize—that two or more signs of obstruction, with none conflicting, is of the utmost importance in establishing the diagnosis. Any one link missing among the positive signs, might be the first reason for disposing of the case as among the pseudo-obstructions such as the functional neuroses, pyloric spasm, and extra-gastric disease with hypersecretion, or gastrosuc-corrhea.

Splashing sounds, in the stomach, to quick palpatory-percussion six to eight hours after having taken food or drink is evidence of retention, but not necessarily obstruction, since it may be due to continued secretion and not to food.

Frequently a patient will say that a crawling or worm-like motion is felt traveling

across the abdomen and accompanied by rumbling and splashing. If you then bare the abdomen and visualize elevations and depressions moving across the epigastrium from left to right, obstruction is practically always present except in case of a thin lax-walled individual. These waves may be intensified by carefully distending the stomach with air or gas; they may be interpreted as due to great hypertrophy of the stomach muscles, acquired in attempting to overcome pyloric obstruction, which actually lifts up the anterior abdominal wall while contracting.

The normal morning gastric residue usually consists of 20 to 30 c. c. of clear gastric juice, testing about 16 and 30 acids. If it exceeds 100 c. c. or if it contains from 10 to 50 per cent food residuum, it is good evidence of retention.

The normal Ewald test meal (1 hour) should not exceed 150-200 c. c. in amount. If it contains sarcinae or *Op-Boas* bact. it always means obstruction. This secretory meal also aids greatly in differentiating the kind of obstruction.

The fractional Rehfuß test meal not only tells us whether we have a normal acid curve, and a retention, but it tells us whether it is digestive, inter-digestive, or continuous hyper-secretion. I do not believe that all of these hyper-secretions are due to secretions from the acid-producing cells, as is inferred by most authorities. They cite cases of hyper-secretion in achylia, which is contradictory. Since the chief cells in the cardiac area, in the necks of the fundus glands, and in the pyloric glands are weak in zymogen granules, and take the strains of mucus cells, it seems reasonable that they might be the most prolific secreting cells when excited or irritated by a lesion. I have seen cases of obstruction, both ante and post-operative, in which the stomach poured out from four to six quarts of watery fluid daily in excess of intake by mouth, literally drowning the patients in their own stomachs. The material often showed no free acid, and one might venture that the material was a transudate from the large, dilated gastric veins and that it did not come from the partial cells, and probably not in such quantities, even from ferment and mucus-producing chief cells.

The seven-hour food motor meal consisting of carrots, potatoes, prunes, bread and butter, eggs or fish and tea with leaves, is simple and efficient. Nothing should be obtained from the stomach in seven hours. This meal, as well as the fractional meal, may allow the food to go through, but show a large amount of secretion remaining. This

should be sharply differentiated from food retention and true organic obstruction, as this may be the deciding point between operative and non-operative treatment. It is also quite frequently the point at which the Roentgenologist and Internist diverge in the final diagnosis. The facts are obviously in favor of the test meals which show the difference between food and secretion remaining in the stomach after normal time. The barium or bismuth may empty 50 or 75 per cent but during that time a continued or hypersecretion may occur which dilutes and suspends the opaque salt, still showing a fairly large shadow, and is generally interpreted as retention of the meal by the present volume estimation. Would it not be an exact method for Roentgenologists to accurately measure the amount of Barium introduced and the amount withdrawn with a stomach tube, rather than to rely on the inaccurate sight-volume estimation?

The Huber-Salol test has some value but is now rarely used because of more recent methods. It consists of giving one gram salol with a meal. If the urine gives the salicyluric reaction 27 hours later, gastric motility is impaired, and the degree is determined by testing the urine every 3 hours until the reaction disappears.

The X-Ray is of the very greatest value in diagnosing gastric obstructions, but it does not excel the methods already given. In the hands of less competent workers, it has led to great error, principally because we have been more profoundly impressed by what we have seen rather than by conclusions arrived at, more slowly, through a series of tests and deductions. It cannot find occult or fresh blood, sarcinae, *Op. Boas bacilli*, total and free acidity, achylia, hypersecretion or gastrosuccorrrhae. Frequently, barium is retained in quantities of from 10 to 30 per cent, and yet a motor meal of carrots, etc., will pass in normal time; or the food motor meal may be partly retained and the barium pass readily. We eat food and not barium. The barium is frequently held back because of the diluting effect of a continued secretion holding it in suspension. The Roentgenologist must be extremely careful in reporting vertigo, nausea, headache or emotion if he notes a retention, and then repeat the work later before giving an opinion. Errors of this sort cause many patients to enter the operating room without obstruction. Retention due to suspected spasm should be watched and the work repeated on another day, and preferably, after placing the patient under physiological doses of *Tr. of Belladonnae*. Scores of ul-

cers are missed by X-raying the cases while under the influence of alkalies and bland foods, which have destroyed the accompanying spasm and inflammatory swelling temporarily. Since most ulcers are diagnosed roentgenologically on the indirect signs, I make it a rule to never X-ray patients until medicines and alkalies have been withheld for several days, and then after coarse foods have been fed. Spasm of the pylorus frequently occurs reflexly from a sore, irritable bowel, due to cathartics and enemas. And more often, I believe, than spasm accompanying chronic appendicitis. Therefore, I withhold these irritants before X-ray examinations. In passing, I might say that the too common diagnosis of pericaecal tenderness and chronic appendicitis would not be so common if cathartics and enemas were withheld before the examination. It might appear that I value the X-ray very little, but such is not the case. However, I do not hesitate to disagree with it frequently. It has great speed, but I have learned to not become stampeded, and to have the patience to withhold final opinion, until all the diagnostic evidence has been submitted. In other words, I believe the X-ray should be used as only one of the many instruments of precision and its tricks and fallacies, as well as its merits, should be known and considered. The X-ray is probably the best single method of diagnosing gastric obstruction and location, but it cannot hold equally with the combination of methods given, which also differentiates between the kinds and degree of obstruction. The X-ray has diagnosed for me the following lesions, which I could not accurately determine by other methods, and I could not possibly get along without it; mesenteric hernias, gastro-colostomies, hair-balls, duodenal pouches, obstructions in duodenum and jejunum, multiple diverticula, diaphragmatic hernias, hour-glass stomach, plastic linitis, polycystic tumors of stomach, gastric syphilis and fistulas of gall bladder and intestines, and Meckel's diverticulum.

After intra-gastric obstruction has been diagnosed and carefully excluded from functional retentions and hyper-secretions, and its location noted, it is then of the greatest importance to know its cause and degree. The importance of the cause and degree of obstruction, is forcibly impressed when one is fore-armed with the knowledge that the vast majority of all intra-gastric obstructions, are due to peptic ulcer or its complication, gastric carcinoma. Ulcer obstructs because of spasm, inflammatory swelling, cicatrix or malignancy, and we now have a way of diagnosing and differentiating these

different obstructions which the X-ray can rarely accomplish. It is a clinical fact that over 90 per cent of the ulcer obstructions can be made to completely disappear (as evidenced by X-ray or food motor meals) usually within from 7 to 14 days, by exactly and completely neutralizing the free HCl of the stomach. Pepsin is inert in an alkaline or neutral media and therefore no corrosion takes place in the ulcer. This neutralization is accompanied by making numerous tests with a stomach tube and testing for free HCl. Each time following an acid test, a few grains more of alkali, and more albuminous foods are added to the menu until the test shows a non-acid medium. The small repeated tests also prevent over-alkalization. If you assume that peptic ulcers do not heal as do other ulcers of the body, chiefly because of the corrosive action of acid-activated pepsin, it is then clear why such a high percentage of real obstructions, accompanying ulcer, open up completely. Practically all medical treatments, and gastro-enterostomies are based on this principle of reducing corrosion to secure a cure. My own reasons for adhering to the corrosion theory were set forth in the State Medical Journal of February, 1920. There is no diagnostic value in partial reduction of free HCl, although partial reduction may stop all symptoms and eventually cure the ulcer. Corrosion and the height of the digestive curve is nearly as great with a weak free HCl, as with a strong HCl, and therefore no conclusions can be reached as to whether obstruction present, or whether it is due to benign cicatrix or malignancy. When all corrosive digestion has been positively proven controlled by the stomach tube, then it is a clinical fact that spasms and inflammatory swellings about an ulcer will disappear in from seven to fourteen days. If the cicatrix of an ulcer does not involve more than half the circumference of the duodenum or pylorus and the remainder is shut off by inflammatory swelling, the control of corrosion will open up most of these obstructions, also, permitting a full motor meal to pass out in normal time. This is not strange when one remembers that the chief business of the pylorus is to hold back food until rendered chymous and then to allow its escape only in very small spurts after every third to seventh contraction wave. The pylorus is not a gaping, inactive muscle, and a marked physiological damage is done where pylorotomy is necessary, and unprepared food is allowed to stream into the duodenum which may cause duodenitis and constant diarrhea. If, after 14 days of complete acid

control the repeated motor meal does not pass through, one can be sure that the lesion is due to cicatrix, involving most of the circumference, or to carcinoma. A carcinoma in an ulcer practically always oozes blood, and neutralization of acid in case of malignancy rarely influences this bleeding because healing does not occur. By examining all the stools for blood while controlling the acidity, if the bleeding continues, one could be reasonably sure that cancer existed rather than benign cicatrix.

Since most surgeons recognize the added risk and the impossibility of excising ulcers in the majority of cases, a gastro-enterostomy is generally done. Again, most surgeons agree, with Moynihan, that gastro-enterostomies should not be done for ulcer, but for the complications of ulcer (usually obstruction). Here are Moynihan's exact words, "Gastro-enterostomy is most efficient only when gross mechanical obstruction exists. Under no circumstances and in compliance with no persuasion, however insistent, is the operation to be done in the absence of demonstrable organic disease." Moynihan based his opinion on the works of Kelling who, after doing gastro-enterostomies on dogs by all the methods known to surgery, summarized his work in this way. "The chyme takes its natural passage through the pylorus if the pylorus is at all patent rather than through any artificial opening." This work was later confirmed by Berg, Delbet, Blake and Cannon. Cannon stated Kelling's opinion in still stronger terms—"When the pylorus is narrowed so as to make difficult the passage of the chyme, the chyme is forced into the intestine by the natural way rather than through an opening remote from the greatest pressure." These experimental studies have since been confirmed by actual observations through duodenal and gastric fistulas by the X-ray on animals, and on human beings. Crohn and Wilensky and Bastedo have more recently reported a large number of poorly functioning gastro-enterostomies. I believe the chief reasons why some surgeons persist in doing this operation so often is because the symptoms subside so readily. Control of symptoms for a few months does not mean that the ulcer is healed or that it does heal sooner than after other partial controls of acidity. Patterson states that gastro-enterostomy controls about 30 per cent of the free HCl, by adding bile and pancreatic juice, and this has been confirmed by Boldyreff.

When Doyon devised the operation, he thought he was accomplishing direct drainage through gravity. The X-ray later

proved the contention of earlier physiologists that nothing leaves the stomach except by the contraction of its walls, because it and its contents are subject to the law of hydrostatics, that is, as if the stomach were a bag filled with water in a closed cask of water, remaining in the same position because being pressed on equally from all sides. So many complications follow gastro-enterostomies that one should consider it gravely the type of obstruction present, as Moynihan advised, before attempting to. Some of the complications are: re-currence of old ulcer; new gastric ulcer formation with old opening closed; ulcer of the jejunum; vomiting from bile-regurgitation and from irritating and infectious secondary gastritis; kinking of the jejunum; obstructing adhesions and duodenitis with constant diarrhea.

The point I wish to emphasize is this: Moynihan and most physiologists and experimental workers agree that gastro-enterostomy is not a drainage operation at all, and should therefore not be done except where organic obstruction exists. Heretofore all organic obstructions were considered as more or less permanent, but this notion was exploded accidentally when Sippy, working out the treatment of ulcer by complete neutralization of free HCl, rather than by guessing at partial control, noticed that obstructions were letting up among the group of supposed operative cases. Now every case of obstructive ulcer should be further diagnosed. Is it due to spasm, inflammatory swelling or cicatrix (benign or malignant) because fully 90 per cent of them can be converted from operative obstructive group to the non-operative, non-obstructive group within a period of 14 days by actually neutralizing the gastric acidity. Is the obstruction really not obstructing the food, but accompanied by a high-grade continuous secretion which is retained and dehydrates the patient because of insufficient contracting through the pylorus? If so, gastro-enterostomy will seldom remedy it. When diagnoses are made along this method of procedure, and obstructions are found which do not let up, they are definitely surgical, and the Internist should waste no further valuable time trying to overcome them.

Obstruction of the stomach due to syphilis is often wrongly diagnosed because of insufficient evidence; usually stomach distress, plus a positive Wassermann. Syphilis of the stomach usually manifests itself at

an earlier age incidence than carcinoma. The general symptoms of anorexia, emaciation, anemia, etc., are nearly always lacking. The X-ray usually shows a large filling defect, a channel stomach, or leather-bottle stomach, or more rarely, hour-glass constrictions or multiple ulcerations. It also differs from carcinoma in that it frequently shows a large Roentgen defect and yet it can rarely be palpated, and rarely bleeds. The following rules have been formulated as acceptable evidence in the diagnosis of gastric syphilis. A demonstrable filling defect must show roentgenologically. A positive Wassermann should be obtained. Evidence of syphilis must be demonstrated elsewhere in the body. Anti-syphilitic treatment must alter the gastric defect on later X-ray examination. Eusterman and LeWald have reported the most cases of gastric syphilis.

Tuberculosis of the stomach, constricting hour-glass stomach, interfering adhesions, hair-balls, carcinoma, polystic formations and fibromatosis and other tumors are definitely surgical. Congenial pyloric stenosis in children is best treated by a Rammstedt operation or gastro-enterostomy.

CONCLUSIONS

It is hoped that I have outlined a sensible, practical method of diagnosing gastric obstructions as distinguished from the gastric retentions, and the abnormal functional secretory conditions simulating real obstruction. That of the true obstructions, I have made clear a method of differential diagnosis which aims to separate the surgical from the medical cases. I should like to impress the fact that gastro-enterostomy produces evil results as well as good, and that it should not be undertaken lightly, because the vast majority of obstructive ulcers will let up without it, and leave a normal physiological stomach. Internists should not waste valuable time in trying for results in cases of cicatrix that do not let up after 14 days of accurate acid control. All functional retentions and continued secretions are handled best medically. Syphilis of the stomach can be readily diagnosed by the method set forth, and rigid medical management will cure or relieve the vast majority of these cases. In gastric obstruction, the rule to follow is to regard all cases as medical until proof to the contrary is obtained, and when fortified with this proof, accept surgery at once, and with confidence.

*CLINICAL ALKALOSIS IN GASTRIC DISEASE

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AND
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In recent years considerable importance has been attached to changes in the acid base equilibrium of the body but hitherto the greatest interest has centered about shifts to the acid side and the frequency and clinical importance of alkalosis have not been well appreciated. However considerable evidence has been collected to show that alkalosis of clinical significance occurs frequently in a variety of conditions and is equally as important, if not more important, than acidosis.

It may be well to state in a brief way what is meant by alkalosis. As is well known, the body, by means of its ability to vary easily and quickly its acid and base content, ordinarily maintains its reaction at a fairly constant hydrogen ion concentration (7.4 to 7.2). The condition in which there is a shift in this acid base ratio in favor of the alkaline side, in other words an increase in the proportion of base to acid, has been named alkalosis and is comparable to the opposite condition acidosis. This condition known as alkalosis may occur with an actual increase in the content of base, with a normal content of base but a decrease in the acid content, or even with a decrease in the actual amount of base which is, however, still relatively large compared to the acid content. In addition alkalosis has been helpfully divided into two types. In those cases where there is a tendency to an abnormal increase in the ratio of base to acid and yet the body is able to maintain a normal hydrogen ion concentration the condition is spoken of as a compensated alkalosis. In those cases where the body is unable to maintain a normal hydrogen ion concentration and there is an actual shift to the alkaline side the condition is spoken of as an uncompensated alkalosis. Naturally the uncompensated type is more severe and of graver import than the compensated type. It is probable that in the majority of cases where symptoms occur the alkalosis is of the uncompensated variety. While changes in the acid base ratios are preferably detected by determining the hydrogen ion concentration and total carbon dioxide content of the whole blood technical difficulties have prevented the general clinical use of

these methods. More commonly the carbon dioxide combining power of the blood plasma is determined. This method, though open to certain objections and possibilities of error, is fairly satisfactory for clinical use.

As might be expected from the foregoing, alkalosis occurs clinically in a variety of conditions. It may be produced simply by the administration of large amounts of alkali and some of the earliest reported clinical cases were of this type¹. By this means there is produced, of course, an actual increase in the alkali content. Alkalosis is also easily produced by the excessive washing out of carbon dioxide by hyperpnoea. This type has been seen during attacks of hysteria, during a long physical examination and may easily be produced voluntarily². More recently it has been reported as occurring during a case of encephalitis in which there was marked hyperpnoea³. Koehler⁴ has recently reported it as occurring in clinical and experimental fever, probably the result of increased lung ventilation. In the cases where the alkalosis is the result of an abnormally high loss of CO₂ there is of course a normal alkali content, or, if the condition continues long enough there may even be an actual decrease in the content of base due to the elimination of the excess alkali.

The occurrence of alkalosis in gastric disease was first observed by McCann who noted it in dogs with experimental gastric tetany produced by ligation of the pylorus. This finding was confirmed by the work of Mac Callum⁵, who showed that it could also be produced by excessive gastric lavage and it has since been observed clinically in cases of gastric tetany². As is well known gastric tetany occurs in cases of pyloric obstruction associated with vomiting and usually with dilatation of the stomach and an increased amount of gastric secretion. It is probable that the alkalosis seen in these cases is the result of loss of hydrochloric acid in the vomitus. The relation of the alkalosis to the tetany is not as yet definitely settled, but evidence is accumulating to show that the alkalosis stands in a causal relationship to gastric tetany.

In addition to the alkalosis in gastric disease caused by the loss of hydrochloric acid, there is a second type which is merely the result of treatment with alkali so frequently used in this type of disease. This type has been fully described by Hardt and Rivers⁷ and may be responsible for untoward symptoms sometimes occurring as the result of such treatment.

It occurred to us that an investigation of patients with common types of gastric disease in whom there was well marked vomiting, but not of the grade to be called extreme, might reveal the presence of an alkalosis even though

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the condition had not progressed to the point of tetany. A number of patients with various types of gastric disease, but principally with gastric ulcer, in whom there was more or less vomiting, were studied in regard to the carbon dioxide combining power of the blood plasma, the blood and urine chlorides and the hydrochloric acid content of the gastric juice and vomitus. Unfortunately we were unable to make determinations of the hydrogen ion concentration of the blood. In order that the administration of alkalis might not influence the picture the patients were not placed on the usual alkaline treatment nor were patients studied who had been taking alkalis just previous to entry. All the patients studied were left on the diets they were taking at the time of admission and in many cases the food intake was naturally very small. The fluid intake was likewise unregulated and was in many cases low. No attempt was made to select cases with marked pyloric obstruction though in practically all the cases obstruction was present to a greater or less degree. The vomiting varied in intensity and duration but most of the patients in whom was found an alkalotic state were having, or had just had a rather sharp attack of vomiting, though not of a grade unusual in such cases.

METHODS

The CO_2 combining power of the blood plasma was determined according to the method of Van Slyke⁸. The blood was drawn from the median basilic vein through a large needle under oil and the determinations made immediately. The blood chlorides were determined according to the method of Austin and Van Slyke⁹ and the urinary chlorides according to the well known Volhard method.

RESULT OF STUDY

As a result of this study we found that some patients with common types of gastric disease associated with a not unusual grade of vomiting are in a state of alkalosis even in the absence of signs or symptoms of tetany, in other words, a pretetanic alkalosis. As might be expected the degree of alkalosis paralleled roughly the severity of the vomiting. Although in the absence of hydrogen ion determinations it is impossible to state definitely, it is probable that the more mild cases were of the compensated variety. In all cases the hydrochloric acid content of the test meal or vomitus was normal or high. In most cases the blood and urinary chlorides were found to be low, as was found by MacCallum⁷ experimentally, and clinically by Grant². It should be pointed out however that the chloride concentration in the body is probably decreased due to the low food intake in these patients.

ABSTRACTS OF TYPICAL CASES

Case No. 1. History. Mr. J. S., age 54, entered the hospital Nov. 10, 1922, complaining of epigastric distress. For twenty years he had suffered from periodical attacks of epigastric pain occurring two hours after meals and relieved by food and alkalis. For the previous year and a half the symptoms had been constant and more severe and he had lost twenty pounds. Shortly before entry there had been considerable vomiting and distinct evidence of retention. There had been occasional numbness of the hands. A few months prior to admission he had had a severe attack of abdominal pain which had been diagnosed "gall bladder colic."

Examination. Physical examination revealed definite peristaltic waves passing across the abdomen from left to right. Roentgen ray examination showed a dilated stomach with almost complete obstruction. A gastric analysis showed a fasting free hydrochloric acid value of 40 and a total acid of 62. The test meal showed a free hydrochloric acid of 28 and a total acid of 50.

Course. The patient was placed at rest in bed. On Nov. 14 the CO_2 combining power of the blood plasma was 77.8 vol.%, the blood chlorides were 352 mgs. per 100 cc. and the twenty-four hour urinary chlorides were 1.28 gms. By Nov. 16 with the rest and cessation of vomiting the CO_2 capacity had dropped to 59.1 vol.% and the total blood chlorides had risen to 461 mgs. per 100 cc. Operation was advised, but the patient wished to return home for a few days. During his stay at home there was a little vomiting. On his return to the hospital on Nov. 25 the CO_2 combining power of the plasma was 69.5% and the urinary chlorides 0.81 gms. He was transferred to the surgical department for operation, where an obstructing pyloric ulcer was found and removed, but the patient did not survive the operation. The numbness of the hands noted above was the only symptom of alkalosis and so signs of tetany were ever observed. It will be noted that with the cessation of vomiting the CO_2 combining power returned to normal and the blood and urine chlorides rose.

Case No. 2. History. Mr. M. O'C., age 52, entered the hospital on Nov. 11, 1922, complaining of pain in the lower abdomen. For eight years he had suffered from epigastric distress occurring about an hour after meals and relieved by food and alkalis. For the seven months prior to entry the pain had become severe and constant. He had vomited a great deal at times and had on occasion washed his stomach out with salt water. He had lost twenty-five pounds in the previous year.

Examination. On examination a dilated stomach could be mapped out and distinct peristaltic waves were seen passing across it from left to right. Roentgen ray examination revealed a huge stomach with almost complete obstruction. Gastric analysis showed a free hydrochloric acid value of 36 and a total acid of 54 in the fasting specimen. In the test meal there was a free hydrochloric acid of 38 and a total acidity of 60.

Course. The patient was placed at rest in bed. On Nov. 20 the CO_2 capacity was 61.4 vol.%. There was little or no vomiting. On Nov. 21 the total urinary chlorides were 1.325 gms. On Nov. 21 and 22 there was some vomiting, about 2,000 cc. in all, with a free hydrochloric acid value of 30 in the vomitus. The CO_2 combining power rose to 70.0 vol.%, the whole blood chlorides were 420 mgs. per 100 cc. and the urinary chlorides were 0.6 gms. On the 22nd the patient was transferred to the surgical department, where on operation a duodenal ulcer was found and a posterior gastroenterostomy was done.

The patient made an uneventful recovery and has remained well.

Case No. 3. History. Mr. L. P. entered the hospital on April 4, 1922, complaining of vomiting, loss of weight and pain in the stomach. Until two weeks prior to entry he had felt entirely well. At that time he began to have vomiting spells and during the week before admission he vomited daily. At the time of admission any food caused marked distress and was vomited in ten or fifteen minutes. He also gave a history of periodical incontinence and difficulty in urination. He had lost twenty-five pounds in the two weeks prior to entry.

Examination. Physical examination revealed marked evidence of loss of weight. In the abdomen a large stomach was visible and peristaltic waves were seen passing across it from left to right. Roentgen ray examination showed a dilated stomach with complete obstruction.

Course. The patient was placed at rest in bed. On the day after admission the CO_2 combining power of the blood plasma was 85.3 vol.%, the whole blood chlorides were 455 mgs. per 100 cc. Any determination of the urinary chlorides was impossible owing to the incontinence. The vomiting continued, but in smaller amounts and on the 6th and 7th an examination of mixed specimens revealed an absence of free hydrochloric acid, but a total acid of 44. On the 7th the CO_2 combining power was 72 vol.% and on the 8th it was 72.9 vol.%. On the 8th the patient was transferred to the surgical department, where an operation was performed and a far advanced gastric carcinoma was found. The patient died the day following operation. At no time were any signs of tetany noted.

Case No. 4. The following case is presented to show the effect of a severe alkalosis with the development of tetany and a fatal outcome. Although we unfortunately were unable to make the necessary laboratory examinations to confirm the presence of the alkalosis, we believe the assumption justified by the clinical features of the case.

History. Mr. H. R., age 26, entered the hospital on Sept. 22, 1922, complaining of sour stomach and burning eructations of gas. At the age of fifteen he was struck in the stomach, and for four years afterward had had irregular and infrequent attacks of stomach trouble. At nineteen these attacks became so severe that he entered a hospital. He returned home without relief, but while at the hospital he learned the use of the stomach pump and from that time he used it almost daily, sometimes emptying his stomach five or six times a day. He vomited occasionally, but only when prevented from using his stomach tube.

Examination. Physical examination was quite negative aside from evidence of loss of weight. Roentgen ray examination showed a large stomach with some obstruction.

Course. The patient was allowed up and about the ward and appeared to be fairly comfortable until the 29th, a week later. His stomach tube was taken from him, but it was later learned that he obtained another, which he hid and used secretly several times a day. On the 29th he complained of nausea and it was noted that he visited the toilet many times, where he presumably used the stomach tube. On Sept. 30, he vomited once and asked to have his face and hands rubbed, stating that they felt stiff and out of place. He was not seen by a physician at this time, but it is probable that he had a carpal spasm. On Oct. 1, he vomited again and was confined to his bed. Later in the day he was suddenly seized with a tonic spasm which passed into a clonic convulsion lasting for one and one-half minutes, during which time he was unconscious. He regained consciousness

and remained conscious, sleeping at intervals, until evening, when he sank into a semi-comatose condition. The respirations became very slow (six per minute) and were extremely shallow. The temperature was subnormal. During the 2nd and 3rd he remained in a semi-conscious condition. Muscular twitchings were noted at intervals, there was difficulty in swallowing at times, he developed hiccoughs and the respirations remained the same. On the 2nd and again on the 3rd there occurred convulsive attacks more severe and of longer duration, but in other respects similar to the attack occurring on the 1st. He gradually sunk into a deeper coma, the temperature gradually rose to 107°F. , signs of a terminal pneumonia developed and he died on the evening of October 3rd. Autopsy revealed the presence of a dilated, spastic stomach with a healed prepyloric ulcer, acute multiple abscesses of the lungs and a metastatic pneumonia. It was later learned that the patient had had two similar attacks, the first four months previously, during which he had remained in a semi-comatose condition for from eight days to two weeks. We believe this to be a case of chronic alkalosis with acute attacks of tetany induced by the excessive removal of gastric secretion from the stomach by habitual use of the stomach tube.

EFFECTS OF ALKALOSIS

The effect of alkalosis itself and its relation to the symptoms observed are, as yet, not definitely determined. It has been argued, notably by Greenwald¹⁰, that the effects (gastric tetany) are due, not to the alkalosis itself, but to the toxic action of sodium. While such may play a part in those cases where the alkalosis is due to the excessive intake of alkali it seems unlikely that this may play a part in the other types. A more likely explanation is made possible by the work of Morris¹¹. He has shown experimentally that an alkalosis may reduce the oxygenation of the arterial blood and also interfere with the passage of oxygen from the arterial blood to the tissues. Hence there results a general anoxemia or suboxidation throughout the body. On the basis of these results he suggests that the tetany occurs as the result of an increased excitability of the myoneural junction caused by the suboxygenation.

The importance of alkalosis in relation to gastric disease is three fold. In the first place there is the probable anoxemia with its general ill effects. Second is its relation to treatment. Patients with an alkalosis are in a pretetanic state. The danger lies in the tendency at present to treat patients with gastric disease and particularly those in whom there is vomiting and loss of fluid with oral administrations of and injections of fluid in which are incorporated alkalies and by gastric lavage. Such treatment will increase the alkalosis and may cause the onset of tetany. Finally, in those cases in which operative interference is attempted the alkalosis may affect adversely the surgical risk although probably offset somewhat by the acidotic tendency of the anaesthetic.

The treatment in these cases consists in the

control of the vomiting. Rest and restriction of food suffices for the milder cases and is particularly indicated prior to operation. In the more severe cases and particularly in those which develop signs of tetany early surgical intervention is often indicated. Operation has not in the past, however, proven particularly successful, possibly due to the alkalosis. In such cases and particularly prior to operation the procedure suggested and used by McCann¹² may be indicated. It consists in the intravenous injection of ammonium chloride which tends to produce an acidosis and thereby balance the alkalosis.

SUMMARY AND CONCLUSIONS

Patients with the more common types of gastric disease in whom there is vomiting which need not be extreme may show a shift in the acid base equilibrium to the alkaline side, in other words, an alkalosis.

Abstracts of four illustrative cases are presented:

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*CERTAIN FACTORS TO BE CONSIDERED IN PROGNOSING CURE OF PEPTIC ULCER

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Modern medicine is passing from the stage of empiricism to that of fact. Improvements in academic curricula, instituted and elaborated during the past three decades, are proving

warranted by the mass of accurate information which the investigative scheme of attack is yearly making practically available. To emphasize this point, one need only mention the changed pathologic, biochemic and clinical conceptions, which in less than ten years, have occurred with respect to such ailments as diabetes, goitre, arthritis, nephritis and the severe anemias.

To this steadily growing list we may well add peptic ulcer. In this respect, it is no disparagement to the acumen of Cruveilhier, Rockitansky, Mueller, von Leube, Virchow, the elder Fenwick and Wilson Fox, nor to the host of "moderns"—to within the last decade," to state that much of what was observed, practiced and written of is being proven incomplete and empiric.

Despite numerous pathologic studies of peptic ulcer, the findings have, with a strange constancy, been considered wholly from the viewpoint of the damage to gastric and duodenal mucosae. There has been a curious neglect with regard investigating what types of systemic upset preceded or accompanied the local, viscus anomaly. It is true, that along these lines suggestive work has been advanced by Rosenow, Ophuls, Mann and by Rehfuess, yet in the actual, practical handling of the patient affected with peptic ulcer, little attention has been given to these researches. Ulcer patients, generally, are still being treated with the empiricism laid down by that ancient clinician, Celsus, who, in his classic "De Medicina," suggests "remove or neutralize the acid which causes (?) the ulcer and nature will do the remainder." L. Mueller's (1860) translation of Celsus' precept into the vernacularly impressive and readily understandable, if inaccurate, term "corrosive action" of gastric juice (presumably, "corrosive" from the effect of hydrochloric acid acting upon stomach and duodenal lining) certainly proved to be no advance, scientifically. It only created a confusion, etiologically and therapeutically, with respect the entire ulcer problem. Undoubtedly, Mueller's dictum of "Das Corrosive Geschwur" strengthened the empirician already dominant in peptic ulcer management and left an imprint upon therapeutics which is still strong among those clinicians who have had little opportunity of observing ulcer pathology; who have diagnosed ulcer largely upon questionably significant symptoms (which diagnoses have not been checked by pathologic studies); who have considered *relief* of digestive distress as signifying *cure* of disease and whose case records, scant and incomplete—particularly incomplete with respect following up the individual patient and appraising his status, months or years following the so-called clinical "cure"—have returned evidence which will not bear

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scrutiny. All too frequently "kur"—a mode of management—has been confused with "cure"—the eradication or the permanent repair of an anatomic fault. The peptic ulcer problem demands recasting on modern lines, not only pathologically and clinically, but particularly prognostically.

It is now eight years since, in a series of articles, I called attention to the fact that pathologic, bacteriologic, experimental and clinical studies of peptic ulcer all indicated that, in such affection, one is dealing with a form of systemic or constitutional disturbance in which the ulcer is a local, gastric or duodenal complication. In acute ulcers, such lesions may be compared to the herpes accompanying pneumonia or to the intestinal ulcers of typhoid fever. In chronic ulcer, a not inapt comparison may be made with various leg ulcers, lesions of the kidney or sclerotic plaques on the aorta. In such visceral disturbance, apart from the dangerous complications likely to occur as a consequence of progression of pathologic damage locally, the systemic departure from the normal demands quite as serious consideration as does the special gastric or duodenal defect.

Further, I emphasize that it was the systemic disturbance, frequently continuous and progressive in type, which should be considered as being the cause of the peculiar history of ulcer, particularly with respect to the curious "periodicity" feature—the "attacks"—characteristic for 84 per cent of ulcers; for grave accidents, as haemorrhage, and perforation; for the so-called "relapses" following a therapeutic seance; for the long drawn-out history typical of many peptic ulcers and for permanent cures; these last, not rarely, indicating cessation of the underlying, primary etiologic fault, and, hence, assuming the aspects of *spontaneous* cures.

Clinical studies of gastric and duodenal extracts from proved ulcers of all types, histologically considered, made on my material at the Mayo Clinic and in my departments at the Augustana and the St. Elizabeth Hospitals, showed that acid values bore no relationship to the position or type of ulcer, its duration, its activity or quiescence, nor, with the possible exception of bleeding or obstructive ulcers, to the threat or the presence of grave complications. Hydrochloric acid and pepsin values were shown to be accidental to the individual at different stages of examination. Groups of patients, pathologically affected with like kinds of ulcer, in similar positions and at corresponding ages returned acid and pepsin values in no way resembling each other, and quite similar to the values obtained in ulcer patients wholly dissimilar with respect histologic and positional kind of lesion, age, sex and under different food and environmental influences.

The obvious conclusions from the above studies, compiled from accurate observation upon 2,160 operatively proven duodenal ulcers and 876 similarly demonstrated gastric ulcers, are that peptic ulcer is not only the local duodenal or the gastric complication of an acute transient or a chronic, progressive, systemic disturbance of varied etiologic origin, but that its clinical management can not promise hope of success if the local gastric or duodenal defect receives practically all the attention, while the primary, systemic fault is allowed to progress unrestrained. With such management, fortunate, indeed, are those cases where the ailment spontaneously subsides. The individual who *harbors* the ulcer requires therapy quite as much as does the ulcer itself. Particularly, is it unscientific and empiric, to regard as a therapeutic problem the neutralization of free hydrochloric acid and to consider chemic restrains of acid production desirable as an index of healing and freedom from grave complications. Ulcers, in the presence of no, or of low free HCl, often enough, progress to the point of most dramatic crises, while ulcers, bathed in what one, empirically or in the awe of seventy years of uncorrelated, clinical tradition, assumes to be strikingly high, often subside quickly and frequently seem to heal permanently.

This introduction would seem a necessary prelude to the chief topic of this paper—an article dealing with certain aspects of factors to be considered in prognosing permanent cure of peptic ulcer—cure, not relief of symptoms for a varying period of time. Certainly, the question of what a physician has to offer in the way of assurance to his peptic ulcer patients deserves attention. It is a query made to us daily in our consulting rooms and our clinics. What reply can we honestly make to our patients? On what basis, from experience, collected and tabulated records, and from the literature, can we state that *this* ulcer will heal without operative procedure, *that* will go on to serious complication and another will progress to malignancy?

I have made an attempt to arrive at such an appraisal from a re-study of our records of peptic ulcer. These cases represent patients from all walks of life, from approximately all sections of the country, of ages from 16 to 87 and with the sex ratio practically three males to one female. The study of 700 duodenal and 250 gastric ulcers is not yet complete, but certain data may be submitted here to be taken as facts passable at face value.

In a symposium so comprehensive as presented by today's program, it is neither necessary or proper to exhibit the lengthy details which this study is returning. Only a summary

of what has thus far been developed can be reported.

In order to make an approximately accurate appraisal of what clinical course is before the patient upon whom peptic ulcer is correctly diagnosed, I have endeavored to "tie a tag" on him, so to speak, at the moment of diagnosis and then to travel with him, as an observant Planchet, along the highway which has been the scene of his dyspeptic adventures. That the story has to be recorded toward the termination of his digestive upsets and reconstructed back from its end to its beginning in the *single* patient, may admit of inaccuracies of observation and interpretation, but, in a great group of similarly affiliated, the major conclusions would appear warranted.

If one insisted that his ulcer patients kept a diary of their experiences from the inception of illness, he would achieve a far different conception of the ailment and its varied course than he secures from text-books, journal theses or by contact with the dyspeptic on the occasion of an "attack" or a grave complication. The lesson, most impressively emphasized, would seem to be that true peptic ulcer exhibits a clinical course widely varying in different individuals, and that, for each individual affected, no dependable clinical prognosis were possible at any stage of the ulcer's course. Such admission may seem radical and pessimistic to those clinicians who have grown accustomed to consider relief of symptoms and return of bodily vigor as indicative of healing, especially when some personally devised system of ulcer management has been carried through; it may seem particularly disappointing to those who claim to completely cure from 90 to 95 per cent of all peptic ulcers by pet non-surgical or surgical procedures. But, should the patient whom I have "tagged" at the moment of his ulcer diagnosis have required the physician making the diagnosis (and who was assumed to have had special knowledge of the subject) to write on the back of the "ticket" what would be the ultimate course and outcome of the ailment, and then, if this same patient had returned to the diagnostician after his years of wandering, perhaps the disappointment in the outcome of the "clinical guess" may have been atoned for by the lesson which the patient's experience carried. It is true, that such incidents happen to physicians daily and yet, how often is the message they carry neglected or unappreciated? However, a certain ancient wisdom or shrewdness deters us from prognosing, *in writing*, the future of our ulcer patients, although some find it easy, glibly to quote high cure percentages. Herein, from the patient's viewpoint, lies the weakness of our position and herein,

we cultivate among ourselves a field for controversy.

This state of affairs arises seemingly because we neglect to recognize the systemic faults associated with the majority—perhaps, all—of ulcers. We fail to "follow through" the case to its end, because we are led off into numerous enticing physiologic and chemic bays, while missing the large aspect of the main stream and because we find it easier to cling to simply practiced, therapeutic procedures applicable to groups of patients, or the administrations of nurses and internes, rather than to analyze, personally, the individual patient and treat him, not by rule-of-thumb, but according to his special demands. The average busy gastro-enterologist does not come sufficiently closely into contact with his ulcer patients to have much more than a vague impression of what is going on.

Much information, prognostically useful, may be derived from knowing that when ulcer patients come to me they have had an illness time-duration averaging 20.3 years. The individual range was from two months to forty-eight years. During rather less than an average time of eighteen years, these patients had been dyspeptic by "attacks" or at intervals. Their digestive health between attacks had commonly been excellent. They, then, exhibited no so-called "ulcer history"; at such times, they and their medical advisors had every reason to regard them as being "cured." Particularly, since, without any special change of habits or environment and frequently when living under closely supervised medical, hygienic and dietetic regimen, ulcer "attacks" re-appeared. These attacks usually led to another "cure," and another prognosis that the digestive troubles were ended. There is, in our series, a monotonous repetition of such experiences, until within an average period of 2.6 years (an individual variation of from six weeks to three and one-half years) of the patients' coming under observation. At such time, commonly the "interval" or "periodicity" feature of the digestive anomaly was lost and the patients had become *constant* dyspeptics; often enough, in constant invalidism, under medicinal or stomach tube routine, dietetic restriction or suffering from poorly devised or performed surgical procedures. This *constant* type of dyspepsia was shown by pathologic studies to be due to dense scar formation, with obstruction or deforming lesions, to protected perforation involving other viscera, to repeated gross hemorrhages or continued blood seepage or, in the case of gastric ulcer, to malignant change at the ulcer edge.

Only eighteen per cent of our patients had not been under carefully supervised "ulcer management". One old gentleman gave a his-

tory of forty-eight years of typical ulcer dyspepsia, but because he lived in an isolated community, had never consulted a physician until a hemorrhage brought him to the clinic and an ulcer of the arterio-sclerotic type was demonstrated, the base wide open to the blood vessel. In my series, the number of times systematic "hospital cures" had been instituted, ranged from one to as many as fourteen. Forty-eight per cent of the patients had experienced four or more "ulcer cures." These regimens were commonly of the type long since suggested by Leube, Lenhartz and Ewald and usually had been carried out by leading gastroenterologists. Forty-two per cent of the patients who had "hospital cures" had been treated by the Leube-Sippy method. Of this group, 51 per cent had been under Sippy's personal management at least once (20 per cent) and from two to eight times (80 per cent). And yet, at operation, clinically and by roentgen study, active ulcer, gross deformity from ulcer scar, or malignant degeneration was shown to exist. Practically all the patients, who had not been under careful professional supervision (18 per cent of the total group) had become alkali addicts, stomach tube users or both. Such regimen had in no wise tended to permanent cure of their gastric or duodenal lesions.

Of the whole group of patients, evidences of chronic kidney irritation (a comprehensive term was demonstrated in eleven and one-half per cent. The urine of such patients contained albumin, casts or both. In the light of recent reports by Hardt of the Mayo Clinic, or alkalosis following alkaline therapeusis of ulcer patients undergoing the Sippy management, such urine findings are suggestive, prognostically. The symptoms of alkalosis, described by Hardt and others, were recorded in the histories frequently enough—particularly the early intolerance of milk with alkali, the nausea and irritability. Three instances of tetany were observed, during the past twelve years, one of which proved fatal. It occurred in association with a large duodeno-pyloric ulcer and obstruction.

Not an inconsiderable prognostic significance must be attached to the *systemic or constitutional faults* associated with the presence of peptic ulcer. Thirty-one per cent of the patients had ulcer symptoms appear during or shortly subsequent to an acute infectious disease (flu, la grippe, acute tonsillitis, pneumonia, typhoid fever, streptococcus sore-throat, mastoid or sinus disease, etc.) Nearly two-thirds of the cases experienced recrudescences of ulcer dyspepsia in Spring and Fall, seasons at which common, acute infectious ailments are prevalent. Nine per cent of these patients gave histories of lues or were Wassermann positive

by at least two tests. It is thus seen, that approximately 40 per cent of the total ulcers of this series were associated definitely with an infectious, systemic ailment. To this number may be added 18 per cent in whom active infection was demonstrated about teeth roots, in tonsils, pharyngeal adenoid tissue, or sinuses accessory to the nose and ears. Similar infectious foci also were common to that group of ulcers whose etiology seemed quite definitely dependent upon acute infectious ailments.

That evidences of *infection foci* must be looked for, distantly removed from those readily demonstrated and eradicated in the head, is shown by the observation that in the whole group of duodenal and gastric ulcers, acute or chronic focal infections were demonstrated in the appendix in 39 per cent, in the gall bladder and ducts in 27 per cent, (calculi in $7\frac{1}{2}$ per cent), in the Fallopian tubes in 3 per cent and the kidney pelves in $1\frac{1}{2}$ per cent. The proof that 66 per cent of duodenal and gastric ulcers are associated with pathology due to infection in the appendix or the gall tract, and that such lesions are known to exert a definite influence upon both gastric secretion and motility, imposes both a diagnostic and therapeutic responsibility upon those who treat peptic ulcer whether non-surgically, or surgically. Frequent enough, particularly in the adolescent, the removal of an appendix or the removal of or drainage of a gall-bladder, not only causes all so-considered "ulcer symptoms" to vanish, but the surgical exploration clearly shows that ulcer is absent, or, if present, is represented by innocuous scar. So common in the young are sub-infections of the appendix and the gall tract responsible for the so-called "hyperacidity" syndrome (actually, a gastric motor anomaly bearing little, if any relation to a secretory fault) and "acute" ulcer symptoms, that, in my clinic, it has become the rule to make no unqualified diagnosis of peptic ulcer in the adolescent, unless the syndrome has been accompanied by a gross hemorrhage (in females, not associated with the menses) or the roentgen ray has demonstrated a constant defect. My experience, gathered from following patients to the operating table and from statistics of personal cases, teaches that barely 9 per cent of patients under the age 31 who experience the so-called "hyperacidity syndrome" actually have gastric or duodenal ulcers. Their dyspepsias are caused chiefly by subinfections in the abdomen, particularly in the appendix or the gall-tract, or are produced by motor or secretory unbalance of neurologic, dietetic, endocrine or environmental origin. And yet, text books constantly reiterate, on no evidence whatever, that peptic ulcer incidence predominates during young adult life. One such text-book interpretation of what are commonly motor,

gastric defects, (but loosely is called, "hyper-acidity,") ulcer is diagnosed and treatment instituted. It is liberal to say, that, in the majority of hospital services where peptic ulcer is being non-surgically treated, not more than half of the subjects are actually affected with the ailment. It is not necessary to emphasize further the huge prognostic error arising from such state of affairs.

In accordance with Ophuls' pathologic studies, in our cases, *progressive endarteritis*, with occlusion or rupture of a terminal vessel, is a systemic fault responsible for the causation and continuance of 16 per cent of peptic, particularly gastric, ulcers. One can prognose the course and outcome of such ulcers with about the same degree of accuracy as he is able to prognose similar lesions in the kidney, heart muscle or the aorta. Treatment of the local, visceral lesion exerts little effect upon the underlying, etiologic fault, unless the subject simultaneously receives management directed toward the major and primary disturbance. With exception of the luetic patients, ulcer subjects forming this group are above 45 years of age. Progressive sclerosis may be accelerated strikingly in the presence of infection or by endocrine, psychic, toxic or environmental handicap.

In approximately 15 per cent of my cases, ulcer inception and continuance appeared to be definitely related to a form of *visceral angiospasm*, similar in mechanism to that present in Raynaud's disease. These patients are commonly of the florid, high-strung, emotional type (many exhibited well developed evidences of stigmata of the spasmophilic diathesis); their life histories had been replete with unusually striking visceral upsets; from very infancy they were dyspeptic. In this type of patient, angiospasm may be so intense and long maintained in a section of the visceral wall as practically to amount to vascular occlusion, with consequent mucosal damage and ulcer foundation. If taken early, this group of patients responds to any form of therapy which will restore and preserve psychic balance and equalize visceral blood distribution by preventing local or general angiospasm. Physicians, generally, have paid too little attention to this group. The folly of dosing them with pills and powders, arranging diets or of torturing them by gastric lavage is apparent. The physician of strong personality who secures and keeps their confidence, in other words, tranquilizes and stabilizes them, is of far greater worth than he who depends upon medicinal remedies. It is in this very group that sanitarium routine, the positive manner and the unique maneuvers of the cultist, the soft hands and the

soothing, ecclesiastic utterances of the christian (?.. scientist (?), the vari-colored and vari-temperated lights or the vibratory seances of the electro-therapist proves most useful. The individual response is so capricious that the modes of management which are responsible for instituting psychic balance are myriad and often bizarre. Consequently, one need not be chagrined if such an ulcer patient fails to respond to accepted and carefully carried out clinical care, gradually lapses toward the untutored cultist and there, amid spine jolts, vibrators, calisthenics, curious menus, and colored glow-lights reposes his confidence, finds tranquility and loses his dyspeptic torture. One should recognize the type of patient before such finds it necessary to drift to therapeutic "hocus pocus", at the hands of misguided fanatics and charletans, and should seek the possible causes for emotional and neurologic instability in the patient's mental state, his work, home life, financial conditions, his physical handicaps, etc., and should attempt to adjust him to rationality, by intelligent interpretation, rather than to let such be brought about by dangerously ignorant cultists. It is worthy of comment that those of our profession, who, from the patient's standpoint, most successfully treat peptic ulcer, whether such physicians be internists or surgeons, are those whose positivism, personality, reputation or surroundings excite the greatest confidence or awe. In such event, prognosis not rarely depends on personality; the regimen of management for the gastric or duodenal defect is not particularly material, provided a correct appraisal of the ulcer damage has been made and the regimen is not foolish or dangerous.

Since the foregoing observations are warranted by the study made of my material, it is evident that the patient whom we have "tagged" at the time when ulcer was diagnosed, has usually traveled a considerable route of disability before his visceral ailment is recognizable, clinically. This pre-ulcer disability vitally influences ulcer prognosis. The earliest manifestation of the gastric or duodenal fault may be precipitated by a wide variety of agents or local or systemic accidents.

Not quite one per cent of our patients experienced extra-ordinary intra-visceral *traumata* in conjunction with their primary ulcer symptoms or signs. Such definitely recognizable *acute ulcers* uniformly healed with no more delay than accompanies operative procedures upon duodenum or stomach, except in those instances where traumata resulted in rupture of the viscera or adjacent organs were involved. The mortality in acute perforation was 27 per-

cent; the digestive mortality much higher in those who escaped fatal issue. Apart from those ulcers, acute from traumatic causes, the type of acute ulcer, as commonly diagnosed clinically, pathologically is quite a superficial and evanescent lesion: it resembles the herpetic lesions about the lips in lobar pneumonia—and, frequently, seems to be similarly excited. In my patients, barely 7 per cent of these acute ulcers were accompanied by gross hemorrhage. Of this group the immediate mortality was $3\frac{1}{2}$ per cent—a figure, probably lower than is commonly reported, because, with us, massive bleeding is always an indication for immediate transfusion of large volumes of whole blood by the Kimpton-Brown-Percy method. One-sixth of 1 per cent of the acute ulcers perforated promptly at their first clinical manifestation. The great majority of so-called “acute” ulcers (“mucous erosions”) go to spontaneous cure. Frequently, ulcers of this type can only be suspected to be present, in the absence of gross hemorrhage, perforative signs or roentgen evidence. It is quite likely that only few of what are so commonly diagnosed as being “acute” ulcers actually exist; the symptoms on which diagnosis of this type of ulcer is made rarely bare close scrutiny; similar symptoms are quite commonly excited by numerous extra gastric or duodenal affections.

The prognosis with respect *bleeding ulcers* must always be regarded as grave, not necessarily immediately, but with regard the future. Particularly is this the case when several hemorrhages occur within a brief period of each other. Our observations made at the operating table or post mortem demonstrate that 63.2 per cent of ulcers which have manifested gross hemorrhage, exhibit signs of perforation: complete, impending or protected. Prognostically, then, we may well establish the dictum that massive hemorrhage (when not “vicarious”) clinically spells some form of perforation, either immediately or in the future. A corollary to this is, that ulcers complicated by hæmatemesis or by melena are immediately or potentially surgical problems. Individual exceptions to these statements come to the minds of all of us, but study of a large group of similarly affected warrants the general conclusion.

One of the most serious concomitants of peptic ulcer healing lies in the *development of scar tissue*, capable of producing obstruction, deformity or fixation to viscera adjacent to the stomach or the duodenum. My figures with respect to how frequently such complication occurs are not yet complete, but the material thus far tabulated, indicates that 31.5 per cent of all peptic ulcers

uninterfered with surgically, exhibiting positive clinical and roentgen evidences of their existence over an average period of 14 years, accumulated sufficient scar to cause duodenal or pyloric stenosis, 1.3 per cent cardiac obstruction and 2.7 per cent same type of so-called “hour-glass” deformity. These figures are lower than those usually given by gastroenterologists, particularly with respect pyloric obstruction, because our material deals with actually demonstrated, obstructive lesions and not with local spasms of short or long duration—which spasms furnish fully three-fourths of the average non-surgical diagnosis of obstructing gastric or duodenal lesions. Unless of *luetic* origin, dense scar accumulation, whether in the stomach or the duodenal wall, prognostically means surgical intervention. I am quite familiar with the literature claiming cure by alkali therapy, gastric lavage and diet of as high as 90 per cent of such lesions. The carelessness and absurdity of claiming to relieve patients of their massive scar accumulations can be appreciated only by those familiar with the operative and pathologic findings of these “cured” obstructive lesions when the patients finally come to laparotomy or to autopsy.

To patients, much concern is prevalent regarding whether or not their *ulcers will ever terminate as cancers*. Prognostically, the roentgenologist has enabled us to give something of fairly definite value in answer to this query. The roentgen proof that an ulcer lies in the duodenum enables us to say that the probability of malignancy is very slight. Less than 0.8 per cent of duodenal ulcers terminate as cancers. These lesions are commonly located so as to invade the pylorus or are near the papilla of Vater,

The relationship of gastric ulcer to gastric cancer is still unsatisfactorily demonstrated. This uncertainty causes grave concern, because at present, no one can say to any patient that his gastric ulcer will heal benignly or will progress to malignancy. We believe that approximately 4 per cent of all gastric ulcers located at or near the cardia or in the pyloric sixth of the stomach eventually exhibit definite malignant histopathology or clinical course. Prognostically, a gastric ulcer which has been *intermittantly* active in an adult for years and which becomes *constantly* bothersome is to be regarded with suspicion. Particularly, when in the carefully prepared stool specimen, occult blood is *constantly* present. If, to these two observations, one has the *roentgen proof* of extensive scar, or a crater type ulcer of a diameter in excess of two cm, the ulcer should be regarded as

malignant and promptly extirpated. Histologic studies show that more than six out of ten such ulcers exhibit atypic cell proliferation at their edges.

DISCUSSION

DR. FREDERICK G. BUESSER, Detroit: In the time allotted for consideration of these papers we can touch only the high spots.

If a man gets relief from food and from the alkalies, that is the most definite evidence of gastric ulcer. The X-ray evidence is of great value. Laboratory evidence is of great value. It means that one must avail himself of all three of these methods in certain types of cases.

It seems to me an important thing in gastric work that an individual have some intelligent understanding of the functional capacity of the stomach, just as one wants the functional capacity of the kidney in types of nephritis.

Intensive classification certainly gives a better understanding of the functional power of the stomach. If we can only remember that the job of the laboratory is to assess the functional value of the gastric analysis instead of trying to name the disease by the laboratory finding. From a laboratory standpoint, the most valuable of the information that comes to me is the microscopical study of the gastric contents. In other words, the appearance of the pus cells and the appearance of the blood and of the gastric debris certainly gives some definite inside knowledge of the pathology that might be present.

A word about Dr. Vreeland's paper about diagnosing pyloric obstruction. When one finds Boas-Oppler bacilli one finds lactic acid. It is a clean-cut case. There is no question of that.

The question comes up as to the degree of pyloric obstruction. The question comes up as to whether or not it is advisable to classify as beginning obstruction those cases which show a residue. I think that is one important thing which should be borne in mind, that is, that every individual has a stomach which from its secretory side is peculiar to that individual.

When we talk about a seven-hour retention we must bear this in mind, that an eight hour stomach may be empty in four hours and still show some evidence of pyloric pathology.

An atonic type of stomach can be best determined by X-ray examination. I think an X-ray examination is a most important thing in determining whether that individual's seven-hour retention is of as much significance as a seven-hour retention of another type of stomach.

Regarding the question of belladonna as an antispasmodic in these types of lesion that might be regarded as organic or might be regarded as reflexes from some other condition. Belladonna, in our hands in the work we did on duodenal drainage, in which there was no evidence of pyloric ulcer, when given large doses of belladonna, many of them showed absolutely no relaxation of spasm. The cases that were given belladonna to the highest point of tolerance showed some inclination at times to get enough pyloric relaxation to let the food go through.

I don't think it is good therapy to treat a man at the age of forty for pyloric obstruction by medical means. I think that the advisable viewpoint or the logical viewpoint to take beyond the age of forty or at the age of forty with signs of pyloric obstruction is that the individual should

be treated as a potential carcinoma and operative interference immediately advised.

Unfortunately, no new methods have been introduced in the last several years that would be more helpful in diagnosing certain types.

I would like to ask Dr. Vreeland if he found this condition of alkalosis in cases of pernicious anemia or if he found it in such cases as showed dilation of the stomach. Many years ago Schmidt called attention to the fact that individuals with dilated stomachs were prone to develop tetany. It would be an interesting thing for me to know if any cases with a true pernicious anemia showed evidence of alkalosis.

Regarding Dr. Smithies' paper, which is very timely and characteristic of the gentleman, it is a wonderful resume of the views, which probably differ from the views that have been accepted by many men as to the treatment of peptic ulcer. I, with Dr. Smithies, share this view.

Since the flu epidemic of 1917 and '18, individuals with gastric symptoms, even under the Sippy treatment, have shown an inclination to develop symptoms of ulcer.

The question of focal infection is always interesting. It has been my experience that focal infections are no more common in individuals with peptic ulcer than in individuals without peptic ulcer. For the good of the patient, all foci of infection should be removed. I think under certain circumstances, in other words, running hand in hand with sinus infection and tonsillar infection, if the type of organism can be isolated and if an autogenous vaccine can be made and if, upon administration of the vaccine, a sinus lights up or the throat feels more sore, probably we have something that is going to be of value in the treatment of the ulcer.

I have also noted with the Sippy treatment that certain types of individuals that for many years had shown no evidence of anything pathological had, under Sippy's treatment, developed what Sippy may call a focus. We have seen too many cases of albumin with casts with evidence of retention which we thought we might attribute to the Sippy regime.

After all, it is not only the treatment of the localized condition with which one is contending, but a general upbuilding of the individual in order that an ulcer diathesis, if we may call it that, may be eliminated. How to eliminate that, I do not know.

DR. A. W. CRANE, Kalamazoo: I would be glad to pay my respects to Dr. Smithies, whom I think has given us one of the best resumes of the subject that I have heard. Our own experience in this regard coincides with the doctor's almost without exception. Especially his remark about the absence of ulcer. Some years ago I published a resume of a thousand stomach cases in which I made the statement that we could find no gastric or duodenal ulcer in any of the cases that showed those signs. That is merely a personal experience.

In regard to gastric retention as a sign of obstruction, I think it is well to emphasize that prolonged gastric retention cannot always be relied upon as a sign of obstruction at the pylorus.

In one case which I published in detail, the patient had a gastric residue at the end of three days. There was a massive gastric residue and yet the X-ray examination shows clearly that not only was the pylorus open but somewhat dilated. We could find absolutely no cause for that retention in the stomach or in the upper duodenum.

The case was later studied at the Mayo Clinic and Dr. William Mayo operated upon the case

without knowing the cause of the gastric retention. There was found a carcinoma of the duodenum. And yet that was not obstructed. It was due to the characteristic lesion and not to the fact of any obstruction that caused this retention within the stomach. The general law may be stated that certain lesions below the pylorus may cause prolonged gastric retention.

I have listened to Dr. Smithies' paper with very great interest because I regard him as one of the greatest authorities on the stomach, gastric ulcer and cancer, as you all know. I also like to take issue with Dr. Smithies because that always results in an especially brilliant comeback in his final summing up.

The doctor has given a really noble generalization regarding ulcer, that it is not a local manifestation, but an outcome of some general condition within the system. It is not to be looked upon as merely a local manifestation any more than a plug in the aorta or a varicose ulcer, and so on.

In listening to his paper, I fail to find out what general disease is accountable for gastric ulcer. And when I recall the divers causes, which I could not undertake to give now offhand, divers causes of gastric and duodenal ulcers, I also fail to see how it would be possible to formulate or understand any general condition which could be said to be accountable for gastric and duodenal ulcers, either one.

Again as to peptic ulcers. If we were to consider that the associated pathology was accountable for it and could hold first the appendix accountable and then the gall bladder and then some gynecological condition in the female, and so on through the whole range of pathology, we would destroy the force of saying that gastric ulcer is the association with disease. It is no disease itself, although it may have a bearing upon a gastric or duodenal ulcer.

A great deal of stress has been placed upon the influence of the appendix in the production of healing of an ulcer. In our work I have failed to see a single ulcer heal as a result of the removal of the appendix. There is no question but what gastric symptoms will disappear where due to a violent spasm. It will disappear if the reflex focus is removed. I am not able to assert that I could prove that but I say my personal opinion is that the ulcer will not heal from the removal of the appendix. But I do believe that the gastric or duodenal ulcer will heal if the parts are given sufficient rest if, what is all important, the gastric juice is no longer acid.

I think Dr. Smithies will have to admit that when the gastric juice is rendered neutral or slightly alkaline and there is sufficient rest that, in the absence of anything to hold the ulcer open, healing will occur. That is the most significant thing in the prognosis of ulcer. To my mind the prognosis of ulcer is the prognosis of the gastric secretion. In spite of all the physiologists have told us about pain in the stomach due to distention and the fact that highly acid juices will not produce pain, the fact remains that the patients are relieved of pain as soon as the gastric secretions are neutralized.

I think the statistics Dr. Smithies has offered us are overwhelming in their magnitude. There can be no question that a very large number of cases are relieved, some permanently and some temporarily, by rest and alkalization of the gastric juice. How to explain, I do not know.

If it is not to be considered as a local trouble, then why should we consider that a surgical operation is a cure for ulcer? Why, when a surgeon excises an ulcer and closes the wound and the patient recovers from the surgical operation, why

should he be cured if it is a general condition and not local? As a matter of fact, the patient is not cured. In the work which I have had in personal conversation with Dr. Will Mayo it is his statement that a gastro-enterostomy does not cure duodenal ulcer, and although the case may remain symptom-free the case will give under X-ray examination the same deformity as before. There will be even visible blood in the stool and the patient may die from hemorrhage, although symptom-free and having been operated on for duodenal ulcer. The cure is by no means so easy.

In regard to the multiple pathology, we can draw the conclusion because we have certain conditions present at the same time that therefore one is the cause and the other the effect. We find multiple pathology, as a rule. If the patient is examined with sufficient care, there will be perhaps more or less separate conditions found. It may have some causative relation, but that remains to be proved.

Now I will listen to the brilliant outburst whereby Dr. Smithies will establish the truth and reasonableness of his assertions.

DR. E. L. EGGLETON, Battle Creek: In summing up the results of such a meeting as this, it seems to me certain things are quite apparent. One of those is that a meeting of medical men that does not have a symposium on peptic ulcer is somewhat of a failure. I know of nothing that can start a discussion or that can maintain the interest of an audience so thoroughly as the discussion of this problem which has been before us for a great many years.

Today I think we are also quite well satisfied, from what we have learned, that the diagnosis of ulcer can be quite accurately made. We have plenty of procedure at our hands for arriving at a positive diagnosis, it seems to me, in the great majority of cases of peptic ulcer, whether it be duodenal or whether it be gastric. It is true that a great many cases are insufficiently studied and, as a result, unfortunately treated. But there is no occasion for such conditions today.

Having arrived at a positive diagnosis, what are we to do? I think Dr. Smithies, believing we were a peace loving people, has come over here and has very rudely assailed our ideals. I have been in Grand Rapids before and I have learned from the surgeons that there is a cure for gastric and duodenal ulcer. We know that to be the case. We have heard, from other sources, that there is a possibility of curing surgically something over 84 per cent of all cases submitted to operation. We know that over 90 per cent, according to good statistics, can be cured. I don't know what has happened to Dr. Smithies all these years. He apparently has not been following the literature.

I think we as physicians should also be very agreeable to the ulcer patient. I know of no patient who has so much confidence in his physician as an ulcer patient. Dr. Smithies says in certain cases he has known that the patient has returned eight times for treatment and still has confidence.

Now, this problem may be somewhat discouraging and still, according to Dr. Smithies' own statements, they don't die. He says some of them have been afflicted with this trouble for forty-eight years before coming to him; that the average was twenty years.

As a sufferer of this trouble myself, I obtain considerable relief after hearing such statements as that. I think possibly I run a good risk of getting through a few years longer. What are we going to do? Now, it seems to me that Dr. Smithies has almost presented a program of therapeutic nihilism. Are we going to take out the man's

tonsils, gall bladder and probably prostate and say,—"You are all right now, you have been relieved from the general disease,"—and neglect his ulcer? We have to do something to the ulcer.

I am not yet satisfied that a course of treatment which is carefully mapped out in consideration of what may be wrong with the man generally and which is continued in a careful way for a sufficient length of time is not of value to that patient. I am sure it is. It would take a great deal of discussion to convince me such was not the case.

That is not saying I have been able to cure 90 per cent of my cases or even 60 per cent of my cases. If we only provide permanent relief, leaving out the matter of cure, if a man is permanently relieved of symptoms and if he can follow a normal program in life, I don't care whether he is cured so long as he has relief of symptoms. If a man can lead a perfectly comfortable life and follow his ordinary vocation without trouble, the doctor has done something for his patient. Therefore, I am not entirely in accord with Dr. Smithies in his prognosis. It is true we see a lot of uncured cases and they may be symptomless. At the same time, if symptomless, it seems to me, that the man suffering from duodenal or gastric ulcer is almost as fortunate as the man who has no trouble whatever.

DR. GEORGE MCKEAN, Detroit: I will give the history of a doctor friend of mine. He has gone through, in the last fifteen years, those features of the ulcer picture. I have watched him with interest as I have watched the development of the ulcer problem in medicine in the last thirty years.

We used to hear ulcer called recurrent dyspepsia and then we got our warning that we must not allow recurrent dyspepsia to go on because carcinoma was in the man's stomach as well as in the air. And then we found a great many of these carcinomas were really ulcer. And then we got to calling everything that was hyperacidity ulcer and we are publishing statistics that have hyperacidity cases probably mixed up with the ulcer just as this doctor had, and then we got to the gastro-enterostomy stage and then we had the appendices out. It is said drainage is the whole story. And now Dr. Smithies wakes us up with a story altogether different.

This is the doctor's story that I have in mind now. He had a recurrent dyspepsia and was treated for it. He was treated for nervous dyspepsia because he is a neurotic. He then had his appendix out and he was much better for a little while of his stomach condition. He relapsed. And after a year or two or three, he was shown by X-ray to have peptic ulcer. He recovered, as most of them do at his time of life. They go along and live under proper regime for a time.

He was relieved of his symptoms and was perfectly well, and the war came along and he went to the war. Over there, under the stress of things, in about a year his ulcer symptoms recurred and he was sent home with a dispute between alcoholic gastritis and ulcer of the stomach. He got out of the army on ulcer of the stomach, however. He recovered for quite a time and was at his work regularly and faithfully. He was a mighty fine fellow and didn't have alcoholic gastritis at all.

Within the last year he has been in the hands of one of the world-wide reputation men under this celebrated regime. Now we see him every two hours with his powder, taking it still, and he is wonderfully relieved of his symptoms. He is not well of his ulcer. He has one. He is a surgeon himself and should be operated, of course, but that is different. There is no question about his being an operative case.

His case illustrates the history of the ulcer story.

After all, doesn't it simmer itself down to common sense handling of this patient with the ulcer? Then you must handle the man. If he happens to have the ulcer, of course you have to handle the ulcer, and if he has a systemic infection you must get rid of it. If you don't, your relief of the symptoms doesn't do any good; but if you really get at the bottom of his trouble, if it can be done, then you will get somewhere in the handling of your ulcer.

Most any of us can relieve ulcer symptoms. There is no question about that. There are half a dozen different symptoms. But the recurrent ulcer in the man getting along to forty years old, I don't think, gentlemen, it belongs to the doctors.

DR. W. H. ENDERS, Jackson: I was very much impressed within the last few years with the return of a great many of my ulcer patients. Also, I think that about 50 per cent, or practically an equal number of patients who have been operated on for the cure of ulcer are coming back.

It seems to me that we are drawing too close a line between pathological cure and symptomatic cure. I don't care so much if a patient does have scars left, so long as he is feeling good. To my mind, a cure means a feeling of well being.

I am very much surprised at the attitude of my friend, Dr. Smithies, and the new thing he is trying to make us believe, and also the fact that he has gone so radically over to the side of the surgeon. He used not to be that way. And the others, Dr. Eggleston, have so very well voiced my objections to what he has said that I am going to let that stand. I would like to hear his defense of his position.

DR. WOOD, Detroit: What method does he use for controlling vomiting? The second question is whether he advocates that it is possible to make a definite clinical diagnosis or whether it is necessary to go through elaborate chemical tests of the gastric contents and the urine.

DR. C. EMERSON VREELAND (Closing): I haven't very much to say now as I heard no refutation of my assertion that symptoms from functional disturbance or spasms at the pylorus and inflammatory swelling could not be distinguished from cicatrix, and I still hold that ten to fourteen days of actual control will determine.

Dr. Buesser thinks fourteen days is too long to wait in the case of an obstruction that might be malignant. But I doubt if that is any more of a risk than to go down with the stomach tube.

I think perhaps the standpoint of the men that believed in the corrosion theory as part of the reason why an ulcer does not heal have been misquoted because every one of them, to my knowledge, asserts for the underlying cause and thinks perhaps it is a systemic disease in which the gall bladder and appendix may be involved at the same time.

I have never heard yet why the appendix or gall bladder should be removed if there is a possible cause, for they sometimes have the gastric ulcer. In other words, the doctor of whom Dr. McKean spoke has a very severe sinus infection that the nose and throat men have not cleared up yet.

It seems to me, like any local manifestation, whether it is a long rest or ten hours sleep a night, we should all use all the methods we can and at the same time remove the focal infections.

Then, again, I think that most of us lose track of one important thing in all of our bodies, and that is that nature endows us with the peculiar tendency to heal any lesion that we have. Take, for example, an ulcer in the lung, we should not get a tuberculosis well with an ulcer in the lung if we sent him on a foot race and in smoky air. They have to have a rest and good food and a long time to heal them. It may be six months or six years before they entirely

heal. The same thing is true if you attack an ulcer, which is the local manifestation of a disease.

We have to have a local and a general management. The local management does not have to be surgery in as many cases as we have had heretofore. The men who treat ulcer locally by the alkalization method have recurrences, also. It may be that the individual, in spite of our management, persists in staying out late nights or smoking ten cigars, or abusing himself with coffee, or playing on the stock market, or something to reduce his ability, and does not let the ulcer heal. Whether it is in the stomach or in the lung or in the nose, I can't see why an ulcer in the stomach should be an exception to the general healing.

DR. J. B. YOUmans (Closing): I had been looking for a case of true achylia for about a year. I have not found one. In one case, which I did not report, there was no free hydrochloric acid in the stomach contents, but there was a perfectly good percentage of combined acid.

The doctor also wanted to know whether alkalosis has a tendency to occur in the dilated stomach. It does. It is well known that gastric tetany occurs in cases of obstruction, practically always associated with dilatation and generally with increased secretion.

Dr. Woods wishes to know what method we employ to control vomiting. In these cases which we were studying, we did not care particularly about controlling the vomiting for a day or so. After we had done studying them, rest and restriction of food generally suffices in the milder cases. In the more severe cases, surgical intervention may be necessary. That is, when the cases show signs of tetany and there is possibility of becoming seriously ill, surgery may be indicated. In that case, he is probably put in a better position for operating by treatment with the intravenous injection. He may be put in better condition. It has not yet had the trial of time. That may be the reason why previously operation has not been successful.

The tests for alkalosis are of many kinds. The best, I dare say, would be the concentration of blood and determination of carbon dioxide in the whole blood. But those are involved procedures and are not applicable to general clinical use. Ordinarily the determination of the CO_2 capacity without whole blood is done. That again is practically restricted to use in hospitals. However, you can, by means of determining the alveolar CO_2 function in the alveolar air, generally tell the alkalosis of this type, and that may be used in the home or elsewhere. That is very handy.

DR. FRANK R. SMITHIES (Closing): I was not going to keep this group of men any longer. Dr. Crane has yanked me from a comfortable position in which I was happily ensconced and so I am on my feet as a result of this powerful "Crane."

When I was at Ann Arbor, one of the things that impressed me most significantly and for the longest time was a certain group of mottoes or wise sayings which were painted around the laboratory wall. The regents wanted to gild the place, but they said that was not the kind of place that should have gilt on the walls, and pink furniture. We persuaded them to spend the money on black paint. One wise saying stuck with me all these years. It went, "*Primum non Nocere*."

That is my position with regard to ulcer prognosis.

When I was a student at Ann Arbor, at that time typhoid fever was supposed to be a local sepsis of the large bowel and not a bacteremia. Now, when so eminent a scientist as Professor Novy, at the height of his career, could regard typhoid fever as a local intestinal fault, it seems to me that there are certain reasons for the facts I have presented to you this afternoon. They are not my opinions. They

are my facts from people with ulcer that have been down the line, and should warrant your consideration.

So eminent a man as Osler, in the last edition of his work, stated that all our ulcer statistics should be thrown into the scrap heap because we had been talking about ulcer and treating ulcer and talking about the histology of ulcer when in many cases we had no ulcer whatever with which to deal.

Now, that is not an easy position for people to come to and yet I think my friend, Dr. Vreeland and Dr. Crane, himself, have proved certain things in a direct way which I tried to emphasize. Who of them? Will Dr. Crane himself? If I show up with an ulcer, will he write a ticket, "gastric ulcer" on it and say, what will become of me? That is the test.

I have seen as many actually proved ulcers as any man in this room.

A few years ago what were we doing with syphilis? We did not have salvarsan. What were we doing with nephritis? Giving medicine which acted on the kidney. We were altogether at a loss as to what was happen systematically. What were we doing with diabetes in the last ten years, especially in the last two or three years?

As I look around this afternoon, I realize that I am getting to be an old man. But I have a very great confidence in the future solution of some of these problems when I listen to the excellent papers read by the younger men. I have no fear about the ulcer problem clearing up if we keep a bunch of younger men at work as they have shown they can work.

I was not talking about the treatment of gastric or duodenal ulcer. I was talking about the prognosis. The only time the treatment was brought in was to emphasize how unsatisfactory treatment had been during the past seven years. There is more discussion today about the treatment of ulcer than at the time of the first description of ulcer, which of itself proves that we are in a most unsatisfactory state of mind with most unsatisfactory results to our patients clinically.

Now, of course, I can't keep up with the literature the way they can at Battle Creek. I have a fair reading knowledge. I would like to ask both Dr. Eggleston and Dr. Crane—where are those statistics quoting cures? I can sit down and say that I cure 90 per cent of gastric obstruction; but if I say that, because I am of the age of Dr. Crane and some of the others, they will challenge me at once and say, "Show me; show me your records show me your list of cases. Bring out your cases which have actually been cured."

Now, if Sippy cures 90 per cent of all the ulcers that come under his routine, of all these cases, 90 per cent are cured, and I say so many who have been under this treatment and you say so many who have been treated, my God, the whole country must be full of ulcers. Ninety per cent cured of what we see represents only ten per cent. Where are we? A million diabetic in the country are but a corporal's guard compared to them.

The things I have tried to emphasize this afternoon in calling attention to the prognosis were really put as they were put to try to clear the atmosphere of a lot of this loose talking and thinking about gastric and duodenal ulcer.

I thank Dr. Buesser very much and I envy him very much for giving us that term, ulcer diathesis. It is a comprehensive term which may be used until we know something about it, just as spasmophilic diathesis was used long before we knew about blood examination and the like. He has what we might call an ulcer diathesis accentuated by a great many "getatable" facts.

Soon we will get to a place where we can put our feet on the ground.

IODIZED SALT

Report of the Committee of the Pediatric Section, Michigan State Medical Society.

EDITORIAL NOTE:—*The following minutes and extracts of correspondence incorporated in this report set forth in explanatory detail the work that has been done by the Advisory Committee of our Pediatrics Section in accomplishing its purpose of bringing about the preparation of an iodized salt that would be a safe and efficient prophylactic agent for the prevention of goitre. The tremendous amount of work that was done, the many investigations that were made, the numerous conferences that were held, the securing of the co-operation of salt manufacturers and the success of the entire undertaking is apparent when one completes the reading of this report.*

March 14, 1924.

Dr. F. C. Warnshuis, Sec'y.,
Michigan State Medical Society,
4th Floor, Powers Building,
Grand Rapids, Michigan.

Dear Doctor Warnshuis:

I hardly know how to give you the information concerning our goitre work in a condensed form and still have you absolutely familiar with every step we have taken. Accordingly, I have had made a copy of all correspondence of the minutes of our committee meetings held at various places and of the outline for a goitre lecture to be given by physicians throughout the state and am sending it to you for your use in preparing information you wish to give to the members of the Society through the columns of the State Journal.

In this way you will have first hand information. A word of explanation about the outline and information that may be of help in the preparation of a popular lecture on goitre and its prevention may be useful to you. This outline contains considerable material that would not be given in a public lecture. We have included this information because we have felt that it may be of general help to the lecturers. If a man is well grounded in all of the facts concerning a subject he is talking about, we feel that he will be able to give a better talk and would also be able, because of this knowledge, to answer questions that might arise in the minds of some of the members of the audience. On the other hand, the information contained in the outline is by no means exhaustive—it simply touches the high spots. The idea of the committee is to put before the lecturers a mass of definitely bounded material, beyond which they are requested not to go. In this way there will be a uniformity of speech on the goitre problem in all sections of our state. Accordingly, people of one county will not get a different idea of the subject than those in an adjoining county.

The University has agreed to furnish several sets of lantern slides illustrating the lecture, which will be sent on request to any of the men who are selected to talk on this subject.

The point I wish to make clear is this—that the lecture outline is in no way intended to curtail the individuality of the speaker. He may re-arrange the subject matter or do anything he wishes to with it. The outline simply suggests to him the bounds within which we feel the subject should be kept.

We have had the most wonderful co-operation in our work with everyone we have approached to date. The salt men are getting very anxious to push the

matter and it has been with considerable persuasion that we have been able to hold the scheme in abeyance until we have, as a committee, fully discharged our duties. We had to get through with our conferences with the salt men and get their reaction before we could bring the matter before the Council or the Society in session for their o. k.

One salt company has gone so far as to have labels printed on which they placed a statement indicating that the amount of sodium iodide contained in the package was the amount recommended by the Michigan State Medical Society. They have also gone so far as to place advertising material with the Detroit papers to appear on Sunday, March 16th. I have tried very hard to get them to postpone this for another week at least, until we could hear from you with regard to the results of the referendum.

The salt is going to be put on the market whether we endorse it or not. There is no way of preventing that, and while we initiated the idea and, because of that, are responsible for the appearance of the iodized salt on the market, we may not be able to control a too hasty action on the part of the salt men. The secretary of the Salt Producers Association feels the same way that we do about the problem; namely, that we do not wish to antagonize anyone. We do wish to have everything we do done decently and in order.

Thanking you for your kind assistance and co-operation, I am

Very sincerely yours,

D. Murray Cowie.

PROCEEDINGS OF THE ADVISORY COMMITTEE OF THE PEDIATRIC SECTION OF THE MICHIGAN STATE MEDICAL SOCIETY

FOREWORD

The how and why of an Advisory Committee of the Pediatric Section of the Michigan State Medical Society: At the inauguration of the Pediatric Section at the annual session of the Michigan State Medical Society, held at Flint June, 1922, the Chairman, in an informal address, proposed "that the section appoint a Committee of five, together with the officers of the section, as members ex-officio, to be known as an Advisory Committee, whose duty it should be:

To formulate and offer to the profession of the state—a simple, standardized method of infant feeding; a method of procedure in the prevention of simple goitre; an outline for the care of the under-nourished and pre-tuberculous child; and also some suggestions for the care of the nervous and mentally deficient children."

This idea was augmented by the splendid paper presented by Dr. O. P. Kimball of Cleveland on the "Prevention of Simple Goitre," read at a symposium of thyroid diseases. During the informal luncheon following the morning session the advisability of such a committee and of the subjects which could be taken up were discussed. Dr. D. M. Cowie spoke at some length of his studies upon Goitre which he had carried on for several years and of his plans of combining Sodium Iodide with common table salt, thereby making iodine available in small amounts for all

people in the state. This practical solution of the problem impressed all members so favorably that Dr. G. L. Bliss of Kalamazoo sponsored a motion creating the Advisory Committee—to consist of five members from the section and the officers ex-officio, with Dr. Cowie as chairman. The other members appointed to the committee were: Doctors G. L. Bliss, Kalamazoo; F. J. Larned, Grand Rapids; D. J. Levy, Detroit; F. B. Miner, Flint. Ex-officio members, T. B. Cooley, Detroit, and Lafon Jones, Flint. The committee has functioned since that time and concentrated its studies upon the problem of state-wide Prevention of Simple Goitre.

The brief minutes of the Committee's proceedings are appended.

I.

The first meeting of the Advisory Committee of the Pediatric Section of the Michigan State Medical Society was held on January 24th, 1923, 2:30 p. m., in the Michigan Union, Ann Arbor.

The meeting was called to order by Chairman, Dr. D. M. Cowie. Dr. F. B. Miner was appointed secretary. Other members present: Doctors T. B. Cooley, D. J. Levy of Detroit, G. L. Bliss of Kalamazoo, and F. J. Larned of Grand Rapids.

A general discussion of the phases of child welfare work in which this committee could become interested, followed.

The following motion was made by Dr. Levy and supported by Dr. Bliss: That the Secretary prepare a questionnaire directed to the county secretaries requesting information on the functioning of the child welfare work carried out by the State Public Health Department, Red Cross, and other agencies in their respective communities, and also requesting suggestions in regard to improving the efficiency of the same or mitigating the alleged abuses arising from the same, and that the secretary is to submit the questionnaire to the members of the committee before it is sent out. After a free discussion the motion was carried.

Motion by Dr. Cooley and seconded by Dr. Larned that a copy of the foregoing motion and the questionnaire be forwarded to Dr. Olin, State Commissioner of Health, informing him that the purpose of this action is to aid his department in its important work and to remove, if any, causes of friction and misunderstanding arising from it. Carried.

It was decided casually to concentrate our energies and study upon the question of "Prevention of Simple Goitre."

Dr. Cowie presented an interesting paper on the possibilities of using a small amount of iodine in table salt.

The following questions were given to different members to present at the next meeting:

Dr. Cooley: "The Effect of Iodine on Hyperthyroidism."

Dr. Bliss: "The Iodine Content of the Drinking Waters, Soils and Vegetables of Michigan."

Dr. Larned: "The Incidence of Simple Goitre and the Deaths Resulting From Goitre in Michigan."

The afternoon meeting was adjourned until evening and the committee was tendered a dinner by Dr. Cowie, at which time Dr. William Hale of the Dow Chemical Company of Midland, Michigan, talked to us upon the possibilities of combining iodine with table salt and of its being used throughout the state.

II.

The second meeting of the Advisory Pediatric Committee was held on September 5th, 1923, at the Michigan Union, Ann Arbor.

The meeting was called to order at 4 p. m. by

Chairman Dr. Cowie. All members were present except Dr. Cooley. Minutes of last meeting were read and approved.

A summary of the questionnaire was read and discussed.

It was moved and carried that the following resolution should be presented to the House of Delegates at the coming annual convention of the Michigan State Medical Society at Grand Rapids:

Resolution: Child Welfare—

To the House of Delegates:

Gentlemen: The Advisory Committee of the Pediatric Section of the Michigan State Medical Society recommends that in all communities having health organizations efforts be made to have such organizations brought under the jurisdiction of the local health department and that the expense incurred be raised by funds met by general taxation, hoping this will result in the smaller communities being helped through the agency of the State Diagnostic Clinics as now carried on by the State Health Department and that in large cities the control of these clinics will come under the supervision of the city health officer.

The Committee recommends that the activities of such organizations consist of diagnosis, prophylaxis, and therapeutics and that where prophylactic and therapeutic measures are indicated such measures be carried out only in the case of indigent patients, all other patients being referred to their family physicians."

It was also moved and carried that the following resolution upon goitre prophylaxis be presented to the House of Delegates of the Michigan State Medical Society:

Resolution:

"The Advisory Committee of the Pediatric Section of the Michigan State Medical Society during the past year has had under consideration the adoption of some method of prophylaxis against goitre that will insure that all individuals in the state shall receive the normal amount of iodine."

Your Committee begs to report that it has made a careful investigation as to the safety of giving all individuals, including hyper-thyroid patients, and patients with toxic adenomata two milligrams of sodium iodine a week and has found a unanimity of opinion among those able to judge that this small amount of iodine is harmless.

Your Committee further begs to report that after a careful consideration of the various methods of giving sodium iodide it considers the use of iodized salt as the most practical. We propose tentatively the following plan—that all salt used for food, manufactured in the state or coming into the state, shall contain the proper percentage of iodine, which will be based upon the amount of salt consumed per capita. Possibly a smaller percentage than two milligrams per week, which would be about .3 of a milligram a day, would prevent the development of the majority of goitres.

Your Committee being desirous of carrying their investigations still further, begs your support in taking up this matter with the various salt industries of this state and in causing proper information concerning goitre and its prevention, getting to the general public through the press, the results of our investigation to be reported to you for final action.

Meeting adjourned for dinner, at which an informal conference with Mr. Clyde Holmes was held. Mr. Holmes proposed an educational campaign through the press and a conference with the salt manufacturers to ascertain their reaction to the proposition and secure their co-operation.

Report of meeting with House of Delegates at the annual convention of the Michigan State Medical Society, held in Grand Rapids.

Dr. Cowie presented both resolutions which were referred to the business committee.

The next day the business committee reported

favorable upon the goitre prophylaxis resolution and it was adopted by the House of Delegates.

The resolution upon Child Welfare was not favorably recommended and was not adopted after considerable discussion. A copy of the discussion from the proceedings of the House of Delegates as published in the Michigan State Medical Journal is appended. (See files of the Journal).

At the business meeting of the Pediatric Section, Dr. Larned was elected president, and Dr. Bliss, secretary. The Advisory Committee was re-elected.

F. B. Miner, Secretary.

Dr. Cady sent in his report stating that he had written to various men about the effect of Sodium Iodide on hyperthyroidism. There was a uniformity of opinion that no harm would result from the small quantities we proposed to use. "Dr. David Marine says positively the amount we propose to use can do no harm."

Dr. Bliss presented the following carefully detailed report:

THE IODINE CONTENT OF DRINKING WATER, SOILS AND VEGETABLES IN MICHIGAN

I

Reports from the Michigan Agricultural College state that repeated examinations of large quantities of water (100 gallon lots) have failed to find even a trace of iodine in Michigan water.

II

For soils, we are unable to find any record of analysis of the soils having been made for the presence of iodine, in any of the central states.

III

Vegetation of Michigan—Reports from the Ohio Agricultural Experiment Station upon the examination of vegetation from the various states of the

(3) Among the garden vegetables and root crops Union is presented in the following summary, Michigan contained even so much.

This summary shows that in order of increasing abundance of iodine in the several groups, mentioning first the one in which iodine is most rarely found, these groups would rate in the following order: (1) Nuts, (2) Spices, condiments and stimulants, (3) Fruits, (4) Cereals, (5) Hays, silage and forage crops, (6) Garden vegetables and root crops, (7) Leguminous seeds, (8) Animal products and (9) Manufactured foods, and milling and manufactory by-products.

IV

Among the animal products the only one containing iodine in more than traces was beef and hoof, from swine, a sample prepared in the course of a complete chemical accounting for the bodies of some experimental subjects. No iodine was found in 18 samples each of cow's milk, urine and feces, but traces were found in butter, eggs, and in several kinds (but no means in all samples examined) of meat, fish and crustacea.

CLASSES OF FOODS

(1) Among the cereals, iodine was found as an uncommon constituent; usually in traces only, and without apparent relation to the methods of fertilization and treatment.

(2) None of the fruits contained more than the smallest recognizable traces of iodine, and very few beets rather commonly contained traces of iodine, and in one case a large amount. Two out of three sam-

ples of cucumber contained iodine; also one out of three samples of celery. Iodine was found in single samples of endive, kohlrabi and lettuce. Among onions five samples out of 15 contained iodine; parsnips, two out of six. Six samples of potatoes out of 21 contained iodine; it was also found in spinach and in rhubarb. We found iodine in one sample of turnips out of 11, but none in tomatoes, pumpkin and squash.

(4) Of the hays, silage and forage crops about one sample in four contained iodine. Among leguminous seeds iodine was found in 11 samples out of 32; more commonly among beans, peas and cow peas than among soy beans.

(5) The manufactured food, and milling and manufactory by-products contained iodine in 13 samples out of 25; of those containing iodine 10 were made from cereals. The offal portions of the grains are richer in iodine than the more starchy parts.

(6) Agar agar and Irish moss were richer in iodine than any other products examined. They are the only marine plants included in this study.

(7) Nuts, spices, condiments and table salt are not important sources of iodine in the dietary; none at all being found in seven pounds of nuts and in 16 samples of table salt.

The more important sources of iodine in the human dietary then, are the garden vegetables, though some is also found in the cereal foods, and in several foods of animal origin, mostly of the sorts less commonly used.

Among the foods used by livestock the most important sources of iodine are the hay, silage and forage crops, and also the milling and manufactory by-products, comparatively little being found in the natural grain foods.

It is true, however, that in consideration of the small proportion of the food samples which contained iodine; also the facts that even when present the iodine was usually found only in traces, and that there was not commonly a consistent character of the iodine content of foods from a given region, we conclude that we have no satisfactory basis for statements as to the general geographic distribution of iodine in the foodstuffs of the United States. The evidence seems much more to emphasize the rarity and the accidental nature of iodine as a food constituent.

Variations in the iodine content of the same grain crop from several plots in the same field are often comparatively prominent. None of the ordinary methods of fertilization, or other details of management of the soil have been found in any regular way, to affect the iodine content of field crops.

The results of the investigation direct us toward a study of factors other than the diet which affect the amount and condition of the iodine present in the thyroid, as promising results of greatest significance in relation to the cause of goitre.

SUMMARY

An exhaustive examination of the literature from State Agricultural Colleges and from Experimental Stations and from chemical laboratories show that the iodine found in the waters of Michigan is nil; that, for the soils of Michigan there has been no analysis made; for the vegetables of Michigan only the very slightest trace has been found; that the iodine content of foods grown in the goitrous regions appears not to be lower than in foods grown elsewhere, nor is a high iodine content characteristic of foods grown in goitrous regions.

Dr. Miner presented the following letter:

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY
WASHINGTON

July, 18, 1923.

Dr. Fred B. Miner,
Flint, Michigan.

Dear Doctor Miner:

Dr. C. F. Langworthy has requested that this Survey send you all information on iodine in natural waters throughout the United States especially in Michigan.

You have undoubtedly read the preliminary paper by Dr. J. P. McClendon, published in the Journal of the American Medical Association March 3, 1923, page 600, in which the occurrence of iodine in natural waters in the United States is discussed and is shown on a map. Dr. McClendon probably has more information in regard to the actual quantities of iodine in natural waters in the United States than has been collected by anyone else. It is not evident just why there should be no more iodine in natural waters along the Atlantic Coast than there is along the Pacific Coast. It seems probable that Dr. McClendon has been rather free smoothing his curves both for iodine in the water and for the incidence of goitre.

The quantities of iodine present in natural waters are so small that determinations of iodine have rarely been made except in analyses of brines and in analyses of mineral waters supposed to have some medicinal value. As a result of this condition the fact that iodine is not reported in an analysis of water is no indication that it would not have been found if a sufficient quantity of water had been taken for the analysis. It is to be hoped that Dr. McClendon's investigations may possibly bring out some relation between the quantity of chloride and the quantity of iodine in natural waters. It has generally been found that iodine can be detected in waters containing 1,000 parts per million of chloride without using an excessive quantities of water for the test.

Except as it may have been done by Dr. Clendon I have no knowledge of any search of analysis of waters throughout the United States to select those in which iodine has been determined.

Very truly yours,

PHILIP S. SMITH,
Acting Director.

The Third Meeting of the Advisory Pediatric Committee was held at the City Club, Jackson, Michigan, December 14th, 1923.

The meeting was called to order by Chairman Cowie. All members were present except Dr. Bliss of Kalamazoo. Guests present were Dr. William Hale of the Dow Chemical Company, Midland, Michigan, and Prof. Wm. D. Henderson of Ann Arbor, Michigan.

Dr. Cowie presented a report in detail of a meeting in Detroit with several of the Salt Manufacturers, at which meeting members Drs. Cowie and Levy were present.

Dr. William Hale of the Dow Chemical Works, Midland, presented a number of exhibits of salt mixed with different percentages of Sodium Iodide to be tested for the detection of taste of iodine and for the color of the salt. It was found that 1/100% was barely detectable in taste and had no change in color. 1/200% could not be detected by taste.

A rather lengthy discussion followed as to the methods of combining iodine with salt, and he was to ascertain and report at the next meeting if Sodium Iodide in these small percentages would have any effect upon foods, particularly butter, meats and starchy foods, and if there would be any deleterious effects upon hides in the tanning process.

Professor Henderson then presented the scope of the work of the Joint Committee on Public Health Education, stating that last year 196 lectures were given, reaching about 26,000 people, and that he experienced difficulty in securing medical lectures in different parts of the State, and that the majority of

requests from organizations were for talks upon the subject of goitre. He proposed dividing the State into districts and selecting physicians interested in the prevention of goitre in these respective districts. Dr. Cowie presented a tentative outline and offered to prepare a general outline of a lecture covering the history of thyroid gland diseases, goitre surveys, the methods of combating the development of the disease known as "Simple Goitre," and also stating the purpose of this committee and its recommendations.

It was also proposed to mail out a questionnaire to the members of the committee for the purpose of securing a number of nominations for lecturers in the different districts of the State.

A general discussion followed as to the best way to control the proper amount of Sodium Iodide to be put into salt, whether by State law or by copyright. It was the consensus of opinion to do neither, but rather to create a demand through educational channels for an iodized salt and that we co-operate with the salt manufacturers in seeing that the right amount is used.

Meeting adjourned.

F. B. MINER,
Secretary.

The Fourth Meeting of the Advisory Pediatric Committee was a joint meeting with members of the Michigan Salt Producers Association at Hotel Tuller, Detroit, March 7th, 1924, at 10:00 A. M. Members present were: Chairman Cowie, Drs. Cooley, Levy and Miner. Members of the Michigan Salt Producers Association present were: Mr. Doremus, Secretary; Mr. O. W. Mulkey, Mr. J. L. C. Mulkey, Mulkey Salt Company, Detroit; Mr. Franklin Moore, Diamond Crystal Salt Co., St. Clair, Michigan; Mr. A. E. Snow, Mr. W. W. Thune, Inland Delray Salt Co., Detroit; Mr. J. I. Seelby, Michigan Salt Works, Marine City, Michigan.

The meeting was called to order by Mr. Doremus, who first read a letter from Mr. F. F. King of the Colonial Salt Company of Ohio stating that his company had for two years been considering the making of an iodized salt, but had not as yet found a method of combining the Sodium Iodide with the salt, nor were they as yet agreed upon the amount of Sodium Iodide to be used in a given amount of salt.

Dr. Cowie presented the aims and purposes of the Advisory Committee by giving a historical sketch of the study of thyroid diseases in various countries and at different periods of time so far back as the ancient Greeks before the birth of Christ, who found that the ash from burned sea sponges cured goitre. He also commented upon the work of Drs. Marine and Kimball of Ohio, and gave the astounding figures on the incidence of goitre in Michigan as recently compiled by Health Commissioner Dr. R. M. Olin from the survey of school children in four different counties.

Dr. Hale, Chemist at the Dow Chemical Company, exhibited several samples of salt containing different percentages of Sodium Iodide, showing that it was possible to combine salt with Sodium Iodide so that the taste was not detectable nor the color changed. He also stated that in the low percentages there would be no effect upon butter, in the cooking of meats and starchy foods unless some mineral acid is present, nor would there be any effect upon the curing of hides.

A general discussion then occurred with the Salt manufacturers as to the best methods of combining iodide with salt, and also the question of cost was considered.

Motion was made by Dr. Levy and seconded by Dr. Cooley that salt to be iodized should contain 1/100% or .7 of a grain of Sodium Iodide per pound of salt.

All the salt manufacturers demonstrated much interest in the proposed welfare work on Simple Goitre prophylaxis as outlined by the Advisory Committee, and expressed a willingness to co-operate with the committee in manufacturing such a product and at a very slight additional cost to the consumer.

Meeting adjourned.

F. B. MINER, M. D.
Secretary.

MINUTES OF THE COMMITTEE MEETING
HELD AT DR. COOLEY'S OFFICE, 987 E.
JEFFERSON ST., DETROIT, TUESDAY,
DECEMBER 11, 1923, 10:00 A. M.

Those present were Dr. Cowie, Dr. Levy, Dr. Cooley, Mr. Henry Whiting, President Diamond Crystal Salt Co., St. Clair, Mich.; Mr. F. W. Moore and F. Moore of the Diamond Crystal Salt Co., Mr. W. W. Thume of the Inland Delray Salt Co., 442 Murphy Bldg., Detroit. Mr. D. B. Doremus, Secretary National Salt Producers Ass'n, was represented by his son.

Dr. Cowie briefly presented the subject of Goitre; its frequency in Michigan in man and animals; how it can be controlled by giving iodine; what doctors individually have tried to do in the prevention of goitre by giving iodine, and the results obtained; an outline of what has been done for school children by the co-operation of educational boards and interested citizens, and what had been accomplished in Switzerland by the use of iodine in the schools. He then presented the idea of iodizing all salt used for food for man and animals, pointing out that medical men had not found a method thus far which insured that all the people in the State of Michigan would get a sufficient amount of iodine. The poor as well as the family in easy circumstances, the man, woman, and child in the remotest part of the State would unconsciously and without effort on the part of anyone, get the small amount of iodine that is necessary to prevent the development of the large per cent of goitres, if the iodine was contained in salt, the only food constantly used by man and domestic animals.

Dr. Levy and Dr. Cooley emphasized the importance of some method that would assure all the inhabitants of the State getting the proper amount of iodine. He told of the difficulties encountered when this problem was left to the individual physician who unintentionally would forget to see that all children, particularly, under his care were given iodine. He also pointed out that the probability that the amount of iodine given would necessarily vary with different physicians, and that by incorporating iodine in the salt, there would be perfectly uniform administration to everyone.

In the discussion, it was brought out that the work we were doing was purely a public service; that the physicians of the State were going into it from this viewpoint alone.

Dr. Cowie quoted Mr. J. B. Ford's statement to him that when the Salt Men really saw some public service to perform, we would find them all, more than glad to co-operate with us.

The question was thoroughly discussed by the Salt Men present. Each expressed his desire to co-operate with us in any way possible. They were definitely interested in assisting in this public service.

The following questions were brought up by them:

What would be the effect of the iodine added to the salt on the color of meat? Farmers like to bring pink colored meat to market. Some salt will change the color of pork. Would the iodized salt have this effect?

What would be the effect of the iodized salt on butter? On hides? On starchy foods?

The Hebrews want crude salt. If all salt is iodized, how would this problem be met?

It was suggested that the cost of the addition of iodine would be added to the retail price of the salt. The meeting adjourned with the assurance that the above questions would be carefully considered and that another meeting would be called during the winter, at which we hope to see more of the Salt Men present.

July 20, 1923.

Dr. C. P. Kimball,
Cleveland Clinic,
Cleveland, Ohio.

Dear Dr. Kimball:

Many years ago I became interested in the subject of goitre and have watched with interest the work of Dr. Marine and his co-workers. Three years ago it occurred to me that the best way to tackle the problem of goitre prevention was to pass a state law compelling some necessary product as salt to contain a certain per centage of iodine. Others have thought of this same thing but not exactly in this way. I have had a fair chance on several occasions to get this through the Michigan State Legislature but held back because of failure to find enough statistics on the amount of sodium iodide that might effect individuals who have a tendency to hyperthyroidism. From my own small experience with cases of hyperthyroidism the amount of sodium iodide we would necessarily have to add to the salt would not be great enough to bring about any perceptible change in the exophthalmic's condition.

I could see no disadvantage to non-goitrous individuals getting this amount of iodine. However, as I said before, I did not go ahead with the idea. At the last meeting of the Pediatric Section of the Michigan State Medical Society I outlined the plan I had had in mind and expressed the desire that this matter be taken up by the section, not by me individually, and that a committee be appointed to investigate the various phases of the subject. I was appointed chairman of the committee. At the first meeting held in Ann Arbor last winter I assigned topics to the different members of the committee to work up. You have probably heard from some of these men.

It is now getting time for us to have our second meeting and I should like your opinion as to whether you think it safe and advisable to make an effort to get some legislation through. I am told we will not have much difficulty. Do you think the small amount that we would have to add to the salt could in any way be dangerous to non-goitrous individuals?

As a basis for our work I have kept tab on the amount of salt used in an ordinary family for a number of years. From this we can roughly estimate the amount utilized per capita.

I have re-read with interest your article received today on "Prevention of Simple Goitre." The school plan may be a better plan. The drinking water could easily be iodized. We have an expert manufacturing chemist on our committee who says it is a simple matter to evenly distribute the iodine through the salt. The law would act in this way: All salt entering Michigan would have to prove up a certain percentage of iodine. Although Michigan is a great salt producing state I was surprised to learn that most of the table salt comes from outside of Michigan.

Thanking you for your co-operation and an early reply, I am

Very truly yours,

D. MURRAY COWIE.

DMC:DET

CLEVELAND CLINIC
Euclid Ave. at 93d St.

July 23, 1923.

Dr. David M. Cowie,
320 South Division St.,
Ann Arbor, Mich.

My dear Dr. Cowie:

Your letter of July 20th received. Permit me to say that I have been thinking of this method of prevention of goitre for some time and have even talked this over with several state health commissioners with the hope of getting it passed as a pure food law. This, however, seems a long way off and if it could be taken up by any one state it would be a very great step toward the ultimate end on the prevention of this disease.

The amount which is necessary to prevent the majority of goitres would not, in my judgment, harm anyone. From our experience in working through the public schools on a large scale, we have not seen a single case of so-called hyperthyroidism and not a case of rash from giving a few milligrams per week. We could estimate from the amount of salt used per capita, the amount of sodium iodide to be used, such that each individual would get approximately two milligrams of iodine per week. Possibly even a smaller amount would prevent the majority of cases.

If you have the privilege of placing this before the state legislature, I would greatly appreciate the opportunity of co-operating in any way possible to help work out this important health measure.

If I can ever be of further assistance to you, I will be only too glad to hear from you then.

Most sincerely yours,

O. P. KIMBALL.

JAD:D

September 24, 1923.

Mr. J. B. Ford,
Ford Bldg.,
Detroit, Mich.

Dear Mr. Ford:

I think I spoke to you at one time about a goitre campaign I was interested in. Our work has gone along to the point where we wish to consult with the salt manufacturers. I am chairman of a committee of the State Medical Society, which has this matter under consideration. I am wondering if it would be convenient for you to have me come in some day before long and talk the matter over with you as I am sure you could give me the information we wish and advise us how we should proceed.

With kindest wishes to you all, I am

Very sincerely yours,

D. M. COWIE.

DMC:DET

MICHIGAN ALKALI COMPANY
Detroit, Michigan

September 26, 1923.

Dr. D. M. Cowie,
320 South Division St.,
Ann Arbor, Mich.

Dear Sir:

Your letter has been received upon my return from the east.

In reply would say that I expect to be here most of the time, and any time you let me know two or three days in advance I will have Mr. Browne at the office, so that you can get information which I perhaps could not give you. Of course, we are not salt manufacturers, but use a tremendous amount of it in liquid form in the manufacture of soda. Mr. Browne is, however, well informed on the new methods of manufacturing salt as a commodity, and I think most any other information which you might require.

Very truly yours,

J. B. FORD.

MICHIGAN ALKALI COMPANY
1622 Ford Building
Detroit, Michigan

October 27, 1923.

Dr. David M. Cowie,
c/o Cowie Hospital,
Ann Arbor, Michigan.

Dear Dr. Cowie:

I have just had a long talk with my friend, Mr. Lee, on the subject we were discussing, and he thinks your policy quite the wisest one in going ahead with this matter.

He tells me that the Diamond Crystal Salt Company and the Morton Salt Company are quite the largest distributors of salt in this community, both for table and dairy use. In fact, all of the uses of salt.

He stated that, Mr. Moore is the man to see in connection with the Diamond Crystal, and Mr. Morton of Chicago, in connection with the Morton Salt Company. These concerns, as I stated to you are located on St. Clair River. In fact, I think you could address the Diamond Crystal Salt Company at Chicago. In that way you could get the information from them as to just who to take it up with.

I hope this information will be of some use to you.

Very truly yours,

J. B. FORD.

JB:F

November 13, 1923.

The Diamond Crystal Salt Co.,
St. Clair, Michigan.

Gentlemen:

As Chairman of a committee of the Michigan State Medical Society which has under consideration ways and means of preventing the development of goitre in Michigan, I am desirous of getting into communication with the proper person in your company with whom to take up the question of the iodization of all salt used as food in Michigan.

The above plan has finally been decided upon as the best method of assuring that everyone receives the normal amount of iodine which is lacking in the food, water supply, etc., of the Great Lakes District.

Before carrying our work any further, we are anxious to counsel with the salt manufacturers and distributors in Michigan, acquaint them with our plan, give them all the information we have, and get their ideas on the question particularly as to whether there would be any objection from their viewpoint.

Thanking you for your co-operation, I am

Very sincerely yours,

D. M. COWIE.

DMC:DET

Same letter sent to Morton Salt Co., Chicago.

DIAMOND CRYSTAL SALT CO.
St. Clair, Mich.

November 15, 1923.

Dr. David M. Cowie,
320 South Division St.,
Ann Arbor, Mich.

Dear Sir:

We are in receipt of your letter of the 13th and in reply would say that we do not feel sufficiently posted to discuss the iodization of salt. However, if you can come here, we would like to call into conference two or three of our men so that we get all angles of it and talk the matter over with you.

We will all be here the latter end of next week—22nd to 24th inclusive—or any other date after that you may set.

We will be very glad to co-operate with the Michigan State Medical Society in anything we can do.

Very truly yours,

HENRY WHITING,

President.

HW:U

November 22, 1923.

Mr. D. B. Doremus,
Sec. Salt Producers Assn.,
550 Penobscot Bldg.,
Detroit, Mich.

My dear Sir:

As Chairman of a committee of the Michigan State Medical Society which has under consideration ways and means of preventing the development of Goitre in Michigan I am writing to you on the advice of Mr. Daniel Peterkin of the Morton Salt Company.

Simple Endemic Goitre is due to the lack of iodine in the food and water of the Great Lakes District. If a sufficient amount of Sodium Iodide could be added to some food, common to man and animals, such as salt, the majority of goitres can be prevented. The amount of sodium iodide necessary to do this is almost infinitesimal.

Mr. Peterkin refers me to you as the one best informed on questions that may arise in a discussion of this character. Mr. Henry Whitney of the Diamond Crystal Salt Company has kindly offered to co-operate with us in our quest for information.

We have been studying this question as a committee for over a year with the aid of expert chemists and other scientific men. We now want to talk to the Salt Producers, acquaint them fully with our plan, find out if there could be any objection from their point of view, and if so, to overcome the objection if we can. We feel sure of their full co-operation when they have all the information we possess on the subject.

This is purely a public service and one that will be

productive of much good to the inhabitants of this State. Would it be convenient for you to meet with the members of our committee in Detroit some time in the near future?

Thanking you for an early reply, I am
Very sincerely yours,

D. M. COWIE.

DMC:DET

DIAMOND CRYSTAL SALT CO.
St. Clair, Mich.

December 1, 1923.

Dr. David M. Cowie,
320 South Division St.,
Ann Arbor, Michigan.

My dear Sir:

In reply to your letter of the 28th, would say that we can meet you in Detroit if you can give us a date a few days ahead.

Next week the 3rd, 4th, 5th and 7th are taken, but the 6th and 8th are free, and up to date, all the week of the 10th is free. After next week, however, our time is comparatively open.

I would like to bring three others with me so that it is not as easy to set a date as if I were alone.

Yours truly,

HENRY WHITING,
President.

HW:U

SALT PRODUCERS ASSOCIATION
550 Penobscot Bldg.
Detroit, Michigan

December 3, 1923.

Dr. Murray Cowie,
University of Michigan,
Dept. of Pediatrics and Infectious Diseases,
University Hospital,
Ann Arbor, Michigan.

Dear Sir:

This will answer yours of November 22nd.

The manufacturers of salt would be very glad indeed to co-operate in the matter subject of your letter providing the amount of sodium iodine could be added to the entire output of table salt without detriment to it. It would be almost impossible to separate a portion of the product that would be shipped only into territory bordering the Great Lakes without almost doubling the cost of the product. However, I should be very glad to meet with your committee and go into the matter thoroughly at any time they desire to meet in Detroit.

In the meantime, please know that Eli Lilly & Co., of Indianapolis, Indiana, market a package called Nu-salt in 1-pound round cans which contains iodine and retail for 25 cents per package.

Yours respectfully,

SALT PRODUCERS ASSN.

D. B. Doremus, Secretary.

DBD:H

December 4, 1923.

Mr. D. B. Doremus,
550 Penobscot Bldg.,
Pontiac, Mich.

Dear Mr. Doremus:

Thank you for your letter of December 3, in which you kindly offer to co-operate with our committee. The point you bring up in an important one and it is just for this reason that we wish to consult with the salt men. I have called a meeting at the office of Dr. Thos. B. Cooley, 987 E. Jefferson Ave., Detroit, Tuesday, December 11, at 10 o'clock. There will be several men from St. Clair down to the meeting.

Hoping nothing will prevent your meeting with us at that time, I am

Very sincerely yours,

D. M. COWIE.

DMC:DET

CLEVELAND CLINIC
Euclid Ave. at 93rd St.

November 27, 1923.

Dr. David Murray Cowie,
320 South Division Street,
Ann Arbor, Mich.

Dear Dr. Cowie:

I have been intensely interested in the move that the Pediatric Society of Michigan started last summer,

given me in your letter of July 20th. Also, later in the summer I had an opportunity to talk with Dr. Bennett of Flint who told me more of the possible move to get through the legislature this year the pure food law demanding certain sodium iodide content in table salt. This has always seemed the real solution of the goitre problem to me also. Dr. Marine also maintains the same attitude.

I am expected to give a review of the work on the prevention of goitre and its value at the State Public Health Meeting at Lansing, December 14th. I would be very glad indeed to hear from you and if nothing definite has been worked out I will not mention this idea of the Pediatric Association which will be brought out in due time.

You will be interested to know that I have started a more careful detailed examination of all the salt wells in the country as far as I can go to determine accurately the amount of sodium iodide in the different deposits of salt. This has never been done sufficiently accurately to determine the small amount of iodine which is entirely sufficient to prevent goitre and yet from a commercial standpoint all of the salt beds are reported as having no iodine. I will remember to keep you posted as soon as I can get any definite information on the subject. Hoping to hear from you in the near future, I am

Sincerely yours,

O. P. KIMBALL.

K*S

November 30, 1923.

Dr. O. P. Kimball,
Cleveland Clinic,
Cleveland, Ohio.

Dear Dr. Kimball:

I am glad to have your letter. We are going ahead with the salt proposition very carefully. So far I think we have not made any mistakes. We are now taking up the matter with the large salt distributors and producers of the State and hope to put through all this part of the work in the course of ten days or two weeks. There is more or less criticism and praise of the idea in various quarters of the state depending entirely upon the degree of information on the subject that medical men have. One of our greatest difficulties is going to be the unenlightened medical man so we are planning a careful campaign to increase the general knowledge of goitre among members of the profession and through them to the public. Our health board is very active in this matter. In fact any activity will ultimately turn out for good or any method of prevention proposed which utilizes iodine will also do good.

With regard to your talk in Lansing on Dec. 14th, there is no objection to your mentioning our idea of having the salt iodized. You had better say having the proper amount of iodine and not mention that we expect to iodize it as we have a strong body of Christian Scientists to consider who might oppose the addition of iodine to salt or any other food.

I am glad you are looking up the iodine content of salt wells. Our investigation shows that there is very little iodine in salt produced in Michigan. The amount in the Midland Salt Deposits I believe tests the highest of any in the State but the amount received per capita from the salt of this kind would be nil. We are hoping to have you meet with our committee some time during this winter. Maybe you could stop off a day on your way back from Lansing and it might be possible for me to get most of the members of the committee together at that time.

Thanking you for your letter and co-operation, I am

Very sincerely yours,

D. M. COWIE.

DMC:DET

December 12, 1923.

Dr. Frederick B. Miner,
1010 Genesee Bank Bldg.,
Flint, Michigan.

Dear Dr. Miner:

It is best to leave the meeting as it is, we are not ready for Kimball yet. Dr. Kimball knows all about our scheme and his talk in Lansing is given in such

a way that it falls in with our committee work. We have done quite a lot of work since our last meeting. The situation of the Salt Men is all worked up, everything is now ready for our educational campaign. This is a long and somewhat tedious piece of work which will have to be done very carefully and which will take considerable time. So far I am quite sure we have made no mistakes.

Looking forward to seeing you in Jackson Friday, I am, with kindest wishes,

Very sincerely yours,

D. M. COWIE.

DMC:DET

SALT PRODUCERS ASSOCIATION
550 Penobscot Bldg.
Detroit, Mich.

December 12, 1923.

D. Murray Cowie,
University of Michigan,
Dept. of Pediatrics and Infectious Diseases,
University Hospital,
Ann Arbor, Michigan.

Dear Sir:

My son reported to me the discussion at your meeting yesterday at 987 E. Jefferson Ave., which I regret I was unable to attend myself. While I am not yet able to speak authoritatively on the best method by which your desired result can be accomplished through the manufacturers of salt, I will give the matter careful study within the next month as a system may be applied to each of the plants.

Of course, there are physical differences in the plants that manufacture salt. If the desire was to iodize only table salt or the salt consumed by human beings, it seems that it might be a fairly simple process but the fact that it must also be done for the benefit of animals, puts an entirely different light on it.

As you are undoubtedly aware, most of the salt that is prepared for table use, is treated with 1% of magnesia for the sole purpose of having it soft and in condition to run freely from the shaker in all kinds of weather. The mixing process by which this magnesia is introduced would probably admit of the introduction of the necessary quantity of sodium iodide but the salt consumed by animals is fed without rhyme or reason from any kind of salt that may be handy, mostly common, and this offers a considerable problem.

It is true that more than ever before, animals are being salted by using a block weighing 50 lbs., cube, which is made of kiln dried salt and it might be possible to introduce the sodium iodide into that block without great difficulty or expense.

At any rate, I shall do whatever I can to assist you in solving the problem and hope that when it is convenient for you to do so, you will drop into the office at Detroit.

Yours respectfully,

D. B. DOREMUS.

December 18, 1923.

Mr. Henry Whiting,
Diamond Crystal Salt Co.,
St. Clair, Mich.

Dear Mr. Whiting:

I want to thank you personally for the interest you and the men in your company have taken in our goitre campaign. We are going ahead with the problem you suggested to us at our meeting in Detroit and will give you results of these observations as soon as we have them done. For example, we are having some packers try the effect of iodized salt on hides and on the color of meat. Others are trying the effects of this salt on butter, starchy foods, etc. The results of our tests so far have shown that 1/100 of 1% of Sodium Iodide added to the salt produces no alteration in the taste of the salt and we will probably not need as great a content as this.

We are also placing in a number of homes, in exchange for their salt, our iodized salt which is made at the Midland Plant using the Diamond Crystal Shaker Salt and the Morton Shaker Salt as the basis. Our idea is to have them inform us of any remarks that may be made after a month's use of the salt. In this way we will have a pretty good check on whether any symptoms from the iodine are produced or whether

any unpleasant taste is imparted to the food. There probably will not be as the salt will be necessarily very much diluted in the food. However, it will be well to have information of this kind.

I am delighted with the results of our meeting with you all and am quite convinced that the suggestion your men made with regard to the method of getting this salt to the public is far better than the plan we had thought of. This is a very good illustration of the importance of considering all factors concerned in a matter of this kind before rushing after legislation, etc. We will keep you posted on what we are doing and hope to have advice from you at a future time.

With kindest personal regards, I am

Very sincerely yours,

D. M. COWIE.

DMC:DET

Copy

Max Burnell, M. D., Secretary,
Genesee County Medical Society,
Flint, Michigan.

Dear Dr. Burnell:

The goitre surveys that the Michigan Department of Health has been conducting in four selected counties will be completed and the results tabulated by February first. There is such widespread interest—and so much speculation—on the Michigan situation that the returns of an actual survey will be particularly valuable.

To give you the background—four counties were chosen on the basis of a survey of drinking waters of the State, carried on for several months through our Bureau of Laboratories. Two counties with no iodine content in their drinking water supplies were selected, and two with as high an iodine content as Michigan apparently affords. The school population was the group to be surveyed, and our entire field medical staff of six doctors and six nurses was detailed for the work.

There is no question but that this is the most extensive survey ever attempted, and particularly valuable in its bearing upon the rural situation. I am anxious that the results be given first to the physicians of the State. While prevention of goitre is basically an economic problem—a question of food supply—the initiative in the solution rests logically with the medical profession. The widespread popular interest must be given wise direction.

I realize that your Society programs are probably arranged for the year, but the urgency of the situation leads me to request that you give one evening to a discussion of goitre. I shall be glad to be present, if you wish, to give you a first hand report on the survey findings. A discussion of the preventive measures advanced, treatment of water supplies, salt, or use of tablets, would be very valuable.

May I ask for a reply in the matter?

Very truly yours,

R. M. OLIN, M. D.

Feb. 17, 1924.

D. M. Cowie,
Ann Arbor, Mich.
Dear Doctor:

Enclosed is a copy of Dr. Olin's letter to our County Society. You probably know of his plans. He does not intend to be many leaps behind our proposals and plans. Between both organizations, the subject will surely get to the front.

Thanking you for your kind thoughtfulness,
Sincerely,

FRED B. MINER.

SALT PRODUCERS ASSOCIATION
550 Penobscot Building
Detroit, Mich.

March 3, 1924.

D. Murray Cowie,
320 South Division St.,
Ann Arbor, Mich.

Dear Sir:

Confirming telegram this P. M. It seems it would be much more convenient to have the meeting this week, Friday, than any day next week.

I am calling the manufacturers of Michigan and Ohio here for your meeting, if, for any reason, you cannot

complete the appointment from your end, will you wire me?

Thanking you for your courtesy in the matter, I am
Yours very truly,

D. B. DOREMUS.
Secretary Salt Producers Assn.
DBD:H
THE DOW CHEMICAL COMPANY
Midland, Michigan, U. S. A.

March 6, 1924.

Dr. D. M. Cowie,
Cowie Hospital,
Ann Arbor, Michigan.

Dear Doctor:

I am sending forward today, by parcel post, seven packages of salt containing 0.01 of one per cent sodium iodide. There are two kinds of salt but each has been treated separately and contains exactly 0.01 of one per cent of the sodium iodide put on in the form of a spray.

I trust that you will send these packages to the various doctors concerned and I will take with me to Detroit tomorrow morning some two-ounce samples of each.

With kindest regards,

Very truly yours,

WILLIAM J. HALE

WJH:E

MULKEY SALT COMPANY
Detroit, Michigan

March 8, 1924.

Dr. D. Murray Cowie,
c/o Medical College,
University of Michigan,
Ann Arbor, Michigan.

Dear Doctor:

Yesterday at our meeting you spoke at length about the publicity we want to secure in connection with Iodine Salt. What is done in Michigan will secure the necessary publicity in this State, but it is going to be harder to work up enthusiasm in other States and secure the co-operation of the medical profession and health departments.

Would it be asking too much of you to prepare a pamphlet? We presume that most of the material for this could be taken from the lecture you have for use in Michigan. Possibly the whole lecture could be used if it is not too technical and contains enough illustrations such as the Akron school test. We should think this ought to be signed by you as chairman of the committee appointed by the Michigan Medical Society for the furthering of this work. If you could prepare a pamphlet of this kind we would have it printed and circulated among the doctors and proper public officials of all the States we want to reach with the Iodine Salt. We should also be pleased to furnish you with as many copies of the pamphlet as you wish to use. If you can prepare this for us we should like to have it at the earliest possible moment so we can get it into the hands of the printer. This pamphlet, of course, would be available to anyone wanting to use it, and if other Salt companies want to reprint same we would have no objections.

Yours truly,

MULKEY SALT COMPANY,
J. L. Mulkey, Sec'y.

March 11, 1924.

Mr. J. L. C. Mulkey,
Sec'y Mulkey Salt Company,
Detroit, Michigan.

Dear Mr. Mulkey:

I am very glad to have your letter of March 8th. Our Committee is not vested with power to give out any signed statement as yet. We are getting ready to report back to the Council of the Michigan State Medical Society, the results of our meeting with the salt men. After that time we will be prepared to furnish you with information you can use, as coming from the State Society of our Committee.

The Ohio Salt Men do not realize how much work has been done in Ohio and other states. I believe that when Michigan takes the lead in this work, the other goitre state will soon follow.

We appreciate very much the splendid co-operation of the Salt Producers. It is best not to be too hasty in the matter.

I will keep you thoroughly posted on what we are doing, and at the earliest possible time convey to your association the desire of the State Society.

With kindest personal regards, I am

Very sincerely yours,

D. M. COWIE.

DMC:LD

March 12, 1924.

Mr. D. B. Doremus,
Sec'y Salt Producers Association,
550 Penobscot Building,
Detroit, Michigan.

Dear Mr. Doremus,

In reply to your letter of recent date, I agree with you that we should not be too hasty in putting the salt on the market. I hope you will use your influence to keep the salt men from doing this until our Committee gets the authority from the Council of the State Society to give our O. K. We must be sure we are not violating the Pure Food Laws, which I am quite sure we are not and we must also be sure that the State Board of Health endorses the plan of iodization of the salt.

These are the points the committee has under consideration at the present time. It is very much better to progress cautiously than do something we may regret in the future. So far, the splendid co-operation of the salt men with our committee has resulted in no mistakes. I greatly fear if an effort is made to rush into this scheme, that some definite harm will come from it. There are precautions we will have to give you to print on your labels about the use of this salt.

I am very glad you have brought the matter up, as I had already been urging this same precaution on the part of some of the Salt Producers.

Very sincerely yours,

D. M. COWIE.

DMC:LD

March 13, 1924.

Mr. J. M. Petersen,
Sales Mgr., Ruggles & Rademaker,
Manistee, Michigan.

Dear Mr. Petersen:

Thank you for your letter of March 8th. I shall be very glad to send you the information you ask for at my earliest possible time.

I have taken up the matter of the O. K. of the Michigan State Medical Society with the Council. It will take a week or ten days to get the result of the matter of putting the iodized salt on the market. We have to be sure about the Pure Food Laws and the State Department of Health.

I was very glad of having the opportunity of meeting you in Detroit.

With kindest regards, I am

Very sincerely yours,

D. M. COWIE.

DMC:LD

March 13, 1924.

Dr. William Hale,
Dow Chemical Works,
Midland, Michigan.

Dear Dr. Hale:

You are a trump. We cannot express to you the appreciation we feel for the splendid co-operation you have given our committee.

The packages of salt arrived in due time, and have been forwarded to the different members of the Committee. There was a very strong odor of "Orange Blossom" to the packages, but not to the salt when it was poured out. I imagine this is due to the absorption of some odors at the plant by the carton.

We are having a referendum of the members of the Council of the Michigan State Medical Society taken. We hope to have enough votes by the latter part of the week to enable us to give the Salt Men our O. K. As I have stated before, we have no authority to give permission to use the name of the State Society on packages of salt dispensed by the salt men. That authority has to come from the council, which consists of 14 members, or from the Society in session.

I hope the Salt Men will be content to wait and not be too hasty. Should you see any of them, advise them that it is best to go a little slow just at present. If

this were an individual matter, we could soon have the State supplied with our product.

We must also be sure about the Pure Food Laws and the State Department of Health. We do not want to antagonize anyone.

Again thanking you for your co-operation and with kindest wishes, I am

Very truly yours,

D. M. COWIE.

DMC:LD

MICHIGAN STATE MEDICAL SOCIETY

Office of the

SECRETARY-EDITOR

Grand Rapids, Michigan

March 12, 1924.

TO THE MEMBERS OF THE COUNCIL.

Gentlemen:

THIS REFERENDUM is being referred to you by Chairman Jackson. You are earnestly requested to indicate your VOTE BY RETURN MAIL.

PROPOSITION

The proposition upon which this referendum is based will be stated briefly. It emanates from the Pediatric Section of our State Medical Society. The facts are:

1. For some two years the Pediatric Section has had special committee composed of its members who have been especially interested in the formation and adoption of some plan that would bring about a state wide use of a preparation of iodine. The committee has made many chemical experimentations and clinical observations. The result has been that the conclusion is definitely reached that a table salt, containing iodine, would be the most effective, most readily accepted and most widely used agent. Through further experimentation and clinical study a satisfactory iodized table salt was prepared.

2. The Committee now sought to obtain the interest and co-operation of salt manufacturers. It arranged and held several conferences with salt manufacturers. These manufacturers became interested and as their experiments and chemical studies progressed they perceived the value of iodized salt. As a result these manufacturers are now willing and anxious to manufacture and market an iodized table salt in accord with the Committee's investigations and recommendations. These manufacturers, however, desire to have the authority for the formula and its therapeutic value approved by the State Medical Society. The manufacturers, now that they have completed their investigations, do not desire delaying the distribution of this iodized salt.

3. The Committee of the Pediatric Section feel that this salt should be so endorsed but it does not have the power to endorse and approve it in the name of the State Medical Society. It therefore requests that the Council which is authorized to act for the entire membership of the State Society, grant authority to this Pediatric Committee to certify to this salt as a safe, therapeutic preparation. The Committee is composed of members of our society and are Dr. Cowie of Ann Arbor, Dr. Cooley of Detroit, Dr. Larned of Grand Rapids, Dr. Miner of Flint, Dr. Bliss of Kalamazoo. Dr. Cowie asserts that this salt is possessed of genuine therapeutic merit, that there is no exploitation and that it will cost only a few pennies more per carton than ordinary table salt. That it will be a distinct contribution on the part of the Medical profession of the state to the people of Michigan.

The REFERENDUM IS: Do you approve giving authority to the Committee of our Pediatric Section so that it may state to the Manufacturers of this Iodized Salt that this Iodized Salt is endorsed by the Members of the State Medical Society?

PLEASE WIRE OR MAIL your vote upon receipt of this to,

Yours truly,

F. C. WARNSHUIS,

Secretary.

FCW:E

Saturday, March 15, 5 P. M. Dr. Warnshuis telephoned the result of the referendum vote. Ten for—three against. One not heard from. The Council approves the action of the Committee and gives them per-

mission to give their O. K. to the Salt Producers as per the request of the Committee.

D. M. C.

March 17, 1924.

Mr. D. B. Doremus,
Sec'y Salt Producers Ass'n,
550 Penobscot Bldg.,
Detroit, Michigan.

Dear Mr. Doremus:

I am enclosing copy of an approval certificate endorsed by the Council and Pediatric Section of the Michigan State Medical Society to be placed on packages of iodized salt.

The Council and Michigan State Medical Society voted to support the action of our Committee until our next meeting of the Society in September, when the matter will be gone over thoroughly in the House of Delegates.

You will notice that it is important to underscore the words: **Individuals using this salt must not take other preparations of iodine without the advice of their physician.**

You will also notice the importance of impressing the public with the fact that the salt must be used for cooking as well as for table use.

I have sent a copy of this approval certificate to the Diamond Crystal Salt Co., Mulkey Salt Company, Inland Delray Salt Company, The Michigan Salt Works, and Ruggles and Rademaker Salt Company.

I beg to remain

Very truly yours,

D. M. COWIE.

DMC:LD

APPROVAL CERTIFICATE

This salt contains .01% sodium iodide, the amount approved by the Council and advocated by the Pediatric Section of the Michigan State Medical Society as a preventive of Goitre.

Individuals using this salt must not take other preparations of iodine without the advice of their physician.—(Signed) The Committee.

TO BE EFFECTIVE—THIS SALT MUST BE USED FOR COOKING AS WELL AS FOR TABLE USE.

DETERMINING THE AMOUNT OF SODIUM IODIDE TO BE CONTAINED IN THE IODIZED SALT

The amount of salt per capita per year has been variously estimated. Some have watched the amount consumed by individual families carefully and find 4 pounds per person per year the maximum. This naturally includes the amount consumed by visitors which is negligible. The Salt Producers have estimated the amount to be 5 pounds per person. Others basing their per capita amount on the salt consumption in certain institutions place the amount at 8 pounds per person.

In making its recommendations the Committee decided to err if at all on the safe side. They based the highest safe dose, 1 milligram per day, on the 8 pound per year salt consumption estimate.

As 2 or 3 milligrams of sodium iodide per week will prevent goitre, and 10 milligrams per week has been proved to do no harm it will be found from the following table that 4 pounds of our iodized salt per year per person will furnish approximately 3 milligrams, and that 8 pounds per year per person will furnish 7 milligrams per week, which is less than the maximum known to be harmless.

There are 453 grams in a pound.

.01% of 453 equals .0453 grams sodium iodide per pound.

4 lbs. iodized salt per year gives.....1812.00 milligrams

Per day 0.49 "

Per week 3.43 "

Per day 0.98 "

8 lbs. iodized salt per year gives.....3624.00 "

Per week 6.86 "

The Journal

OF THE

Michigan State Medical Society

ISSUED MONTHLY UNDER THE DIRECTION OF THE COUNCIL

PUBLICATION COMMITTEE

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B. R. Corbus.....Grand Rapids
J. D. Bruce.....Saginaw

Editor and Business Manager

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Grand Rapids, Mich.

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APRIL, 1924

Report Malpractice Threats Immediately to Doctor F. B. Tibbals, 1212 Kresge Building, Detroit, Mich.

Editorials

Place: Kalamazoo.

Time: April 16th.

What: 1. Meeting of Scientific Committee, 10 a. m.

2. Meeting of Joint Committee on Public Health Education, 12 m.

3. Conference of County Secretaries, 2 p. m.

Who: 1. All Chairmen and Secretaries of Scientific Sections.

2. Members of the Joint Committee.

3. All the Secretaries of County Societies.

4. Members of the Council.

5. Officers of the Society.

STILL BIRTHS

In casting about for means and measures to save to parents and through them to communities the lives of new-born infants that are forfeited during or immediately after labor it is wholly fitting that we review etiological factors. It is not fair to the parents, to the public or to the profession to issue a broad statement that these natal deaths are largely preventable and that they result entirely from causes over which we have a control and which can be wholly prevented. In any movement to lower the present rate of infant mortality it is not just to make broad, bold statements when a careful study of facts positively establishes an irrefutable premise.

We are heartily in favor of any movement that has for its object the lowering of our present neonatal death rate, provided that such a movement is not intended to create and establish a system that is inconsistent with our social institutions. We are distinctly in accord with the imparting to the public and to the profession, educational facts and frank information as to existing conditions. We would endorse and aid any movement that will induce parents to recognize that pre-natal care will lessen the morbidity and mortality of child-birth and which would cause them to go to their physician to receive that care and supervision. We would lend every support to a movement that seeks to still further educate physicians so as to make them more capable to render better obstetrical care and attendance to those who consult them. We are eager to elevate the standard of obstetrical practice. We are deeply concerned in the placing of the profession before the public in a light that will clearly set forth the facts that while the doctor has a definite obligation and a clear responsibility, the public is likewise charged with the same obligations and responsibilities and that present conditions are not the sole result of a medical profession's negligence or incompetency.

To refute such a charge, to prevent its gaining a impetus and being carelessly pointed out, as well as to present certain unescapable factors that largely create a big percentage of neonatal deaths and also to indicate wherein we may well become active, we are quoting the following extract from an article that appeared in the Long Island Medical Journal: The author is Dr. Morris Astrachan, and his conclusions are based upon a careful analysis of 1,035 labors during twelve months of 1923.

Emphasis is placed upon the following points:

1. A still-born mortality of 2.4 per cent and a neonatal mortality of 2 per cent.
2. One-third of the still-births were known to be dead on admission.
3. A difficult delivery accounts for about one-third of all still-births; placental bleeding, one-fifth; and unknown causes, one-fourth.
4. About half of the deaths of still-births and those who die within two weeks are beyond control by the obstetrician unless it be through antepartum work. These factors are pre-maturity, placental bleeding, congenital deformity, and so on.
5. Half of the deaths being due to a difficult delivery, are, in a sense, within our control. Improvement can be aimed at lessening this figure.
6. Cerebral pathology accounts for two-thirds of the combined loss.
7. Sub-dural hemorrhage is the commonest cerebral lesion.
8. Version and breech cases have also cranial hemorrhages in high proportion.
9. A diligent pathologist may be rewarded with illuminating autopsy findings, such as a dislocation of the atlas over the axis in a breech extraction.
10. There is a close statistical relationship between all records on the subject of still-birth and neonatal mortality.

STATE VENEREAL LAW UPHOLD

A few months ago we reported a decision of a Judge of the Superior Court declaring the State Venereal Law unconstitutional. Appeal was taken to the Supreme Court. During the past month the Supreme Court handed down its decision which upheld the law. This concludes the matter.

We therefore are advising our members to comply with the provision of the Venereal Law which makes it mandatory to report all cases of venereal disease to the proper health officer on blanks provided. Failure to do so makes you liable to arrest, fine or imprisonment. We urge that careful observance of the law be contributed by every legally registered physician. We also trust that the proper authorities will prosecute these drug-store counter prescribers.

THE KALAMAZOO MEETING

April 16th

Just as we go to press we are able to announce additional features for the Kalamazoo Conference on April 16th. These additional speakers give us the assurance that

we can look forward to a most profitable and entertaining day. We recapitulate the program:

Date—April 16th.

Place—Kalamazoo.

10 A. M.—Meeting of Scientific Committee, Academy Rooms.

12 M.—Luncheon, Burdick Hotel, Joint Committee on Public Health Education and County Society Secretaries.

2 P. M.—County Secretaries Conference. Dr. Olin West, Secretary of the American Medical Association will be the principal speaker.

6 P. M.—Dinner, Burdick Hotel.

Addresses:

1. "Mirrors of Medicine," Morris Fishbein, Associate Editor, Journal of the American Medical Association.

2. Pediatrics, Isaac Abt, M. D., Chicago. Dr. Abt will have with him his guest, Dr. Finklestein of Berlin, who will also address us.

All the meetings will be held on fast time.

Members of the State Societies and who are not members of any Committee or County Secretaries participating in this conference are welcome to all the meetings and evening dinners. They should, however, make dinner reservations by writing to Dr. J. B. Jacobson, Kalamazoo. Please do this promptly so that ample accommodations may be provided.

SOCIETY AFFILIATION

The following, from the "Medical Economics", merits consideration and action on the part of our County Societies:

State	No. of Physicians	Members of State Society
Alabama	2,313	1,665
California	7,549	3,506
Illinois	10,716	7,609
(Headquarters of American Medical Association)		
Kentucky	3,155	1,858
Massachusetts	5,977	4,004
Michigan	4,653	3,192
Mississippi	1,792	848
Nebraska	1,913	1,147
New Hampshire	615	536
New York	16,857	9,472
Ohio	8,086	4,648
Pennsylvania	11,241	7,433
South Carolina	1,368	729
Texas	6,094	3,516
Washington	1,756	1,128
Wisconsin	2,722	1,959

These figures give much food for thought.

It is difficult to imagine how a physician can desire to remain outside of organized medicine. The advantages of membership are many and the expense is trifling. In

some states, membership in the county, state and national organizations can be obtained for not more than \$1.00 a month, and the disinterested observer would presume that every physician would be anxious to better his professional standing in a community by belonging to the proper organizations, even if for nothing else than for the protection of his professional standards. It should be regarded as good insurance with premiums at a very low cost.

Why should the individual physician belong to his county, state and national medical organizations? We present six answers to this question, each of which, we believe, is sufficient to cause a man to make the investment which would enable him to become definitely identified with the very best there is in the medical profession:

1. To have a part in organized effort for the promotion of the science and art of medicine and the betterment of public health.
2. To take advantage of opportunities offered in the medical society for individual scientific improvement.
3. To receive the benefits of friendly social intercourse with other members of the medical profession.
4. To assist in and receive the benefits of organized efforts for the promotion of the material interests of physicians.
5. To be identified with, and recognized as one of, the most reputable, progressive and best qualified group of physicians.
6. To lend your influence for the maintenance of the highest human ideals.

As we have said so often through the columns of "Medical Economics," if the medical profession is to get anywhere we must do it ourselves. We cannot do it until the profession is thoroughly organized, that is, until the majority of physicians realize the necessity of uniting with the organized profession.

We are firmly of the belief that if doctors were to join the medical societies as they should, it would be possible for a united profession to demand of Congress that a Department of Health be added to the President's Cabinet with a physician as its head for the safeguarding of that most precious boon—health. A thoroughly organized profession could go far toward eliminating the cults and isms and 'paths and 'actors that now tend to destroy the faith of the laity in the best there is in medicine. As we conceive it, it is the duty of all physicians to join the county medical society forthwith and then to progress upward and become identified with the American Medical Association, which has done so much for the profession during the past twenty years.

APRIL SIXTEENTH—KALAMAZOO

Meeting of Scientific Committee—Meeting Joint Committee on Public Health Education—Conference of County Secretaries

April 16th promises to be an important day in our organizational activity. For some time arrangements were being engaged in for the holding of the following meetings in Kalamazoo on April 16th:

Scientific Committee: This Committee is composed of the chairmen and secretaries of the Scientific Sections and the president and secretary of the Society. It is the duty of this Committee to arrange for the scientific program of the Sections for our Annual Meeting. The Committee will meet at 10 a. m. in the rooms of the Kalamazoo Academy of Medicine in the Public Library of Kalamazoo. It is imperative that every Section officer be present at this meeting.

Joint Committee on Public Health Education: This Committee will hold its stated meeting at noon. A luncheon will be served in the Burdick hotel. County Secretaries and members of the Scientific Committee are expected to attend this meeting. They are cordially urged to do so. They will receive an inspiring impression of the work that is being done and will gain an insight as to the importance of this educational movement. Do not fail to be present.

Conference of County Secretaries: This Conference, composed of all the secretaries of component county societies and the members of the Council and State Society will be called at 2 p. m. in the rooms of the Academy of Medicine in the Kalamazoo Public Library. The meeting will be presided over by Dr. C. C. Clancy, chairman of the Council's Committee on County Societies. The program will be as follows:

Opening Remarks—J. B. Jackson, chairman of the Council.

"What Constitutes Attractive County Meeting Programs," J. L. Squeir, Calhoun County.

County Membership and Attendance—W. G. Hoebeke, Kalamazoo Co. Society.

Organizational Opportunities, Olin West, Secretary American Medical Association.

Medical Legal Defense—F. B. Tibbals, Chairman.

Round Table—Individual and Common Problems.

There will be full opportunity for every secretary to engage in the discussion of these subjects. The purpose of the Conference is to impart helpful information and to aid each secretary to better carry on our organizational work throughout the state. County secretaries should not fail to attend

this important Conference which the Council has arranged for the advancement of the work and interests of our state organization. Kalamazoo is centrally located. Transportation facilities are ample and good roads will enable many to reach Kalamazoo by automobile. A 100 per cent attendance is expected.

Members of the Council are requested by Chairman Jackson to make it their duty to see that every secretary in their respective districts attends, and also urges that every Councillor be present at the noon luncheon and Conference.

The date is April 16th. The place is Kalamazoo.

GOITRE PREVENTION: A BRILLIANT CONTRIBUTION BY THE PEDIATRICIANS OF MICHIGAN

Our members are referred to the report that is published in this issue and which sets forth the work that has been done by the Advisory Committee of the Section on Pediatrics. This is a splendid piece of work that merits our approval and calls forth our congratulations to the members of the Committee. It is a contribution to the people of Michigan by the State Medical Society for it makes possible the universal use of an iodized salt that is simple, safe, of intrinsic scientific merit and recognized therapeutic value and provides an agent that will lessen the incidence of goitre in Michigan.

The profession of Michigan has thus again blazed a trail that will be followed by other states and which in the end will be recognized as one more contribution on the part of the medical profession toward conserving the public's health.

Editorial Comments

The State Medical Society of New York is actively supporting a new bill introduced in its legislature to control irregular practitioners of medicine. The bill seeks to safeguard the public from charlatans and members of the varied cults. It is, of course, being opposed by the cultists. The bill has two main features—the annual registration of physicians so as to certify them to the public, and the prosecution of the violators of the medical act. Considerable opposition was at first met with in the profession regarding the annual re-registration. However, when the purpose and feature of this re-registration became more clearly apparent, that opposition was withdrawn. We shall look forward to the passing of this new law in New York, for if it proves successful in cleaning out the imposters, the inefficient and the irregular, short-cut cultists, we will welcome such a law in Michigan

and give little heed or thought to any petty annoyance, that annual re-registration may occasion.

When one reads of an insurance company having some 21,000,000 policy holders, investing its surplus and reserve and confining that investment entirely to government, municipality and public utility bonds, is it not well to sit up and take heed? It is recognized that these are the three safest types of investment. Can you afford to be careless with your personal funds and invest them in less safe securities? Of course, if you want to take a flyer, have the means, can afford to lose it, you may be warranted in taking a chance. If you can't, then steer clear from speculative stocks and questionable bonds, no matter how attractively they are described by the suave salesman.

In a discussion of the papers presented in a recent symposium that was given under the auspices of the Chicago Gynecological Society, Dr. Joseph B. DeLee is quoted: "Is the mortality and morbidity of obstetrical practice in the United States as great as the proponents of the Shepard-Towner bill have led the public and some of the medical men to believe? If it is true that the mortality and the morbidity of obstetrics are both so high, why are they so high? If the people, instead of bothering about the Shepard-Towner bill, had got together to see that teaching hospitals were provided, they would not need any Shepard-Towner bill."

That opinion, expressed by a man whose reputation stands high in the profession, is food for much thought. We have heard so much about this mortality and morbidity and the whyfor has never been satisfactorily set forth. Figures are easy to collect and quote, as well as twist. Percentages can be calculated from several premises. They mean nothing. It is causes that we are concerned about and we are glad that as the result of this symposium this Chicago Gynecological Society passed the following resolution presented by Dr. DeLee: "I would resolve that the Chicago Gynecological Society appoint a Committee to investigate the cause of the present high mortality and morbidity in obstetrical cases in the mother and baby. Is it due to lack of good teaching? Is it due to inherent difficulties in practicing obstetrics; to hospitalization of cases, to puerperal infections in hospitals, to greater frequency of performing Cesaerean Section, or to the higher valuation of the baby's life that impels the accouchers to attempt operations dangerous to the mother?" We shall look forward to this report.

"Putofitis," a form of sleeping sickness, seems to be afflicting a goodly number of the members at this time of the year when their dues are payable. By the provision of our by-laws and by special action of the Council, members whose dues are not paid on or before April 1st of each year are automatically placed upon the suspended list. They forfeit all the privileges and benefits of membership affiliation during the period of their suspension. Send in your check to your County Secretary today so as to remain in good standing.

It seems that Coue is back in this country—landing with a face wreathed in smiles, due, undoubtedly, to his vision of American dollars that are very effective in producing smiles. Coueism is the same hocus pocus that is swallowed periodically by sensationallly-inclined beings of inferior mentality—a word fetish by which their mind is tricked. Until individuals will realize and grasp the fact that their education and civilian fitness will ever be defective until they take the trouble and time to learn the fundamentals of physiology, the rules of right living and the factors that undermine well-being it can be confidently ex-

pected that Christian Science, Coueism, cults and Abram's Electronic reactions and all similar fads will find followers who will contribute their dollars to enrich these shrewd promoters. It is clear that the profession's obligation consists of the imparting of this knowledge through public lectures and a wide distribution of Hygeia.

It is a proper expenditure for your society to pay the expenses of your Secretary while attending the Conference of County Secretaries that is to be held in Kalamazoo on April 16th. He goes as your representative, in your interests and for the good of your county society. He contributes his time, loses that which his practice would yield him—it's but fair that your society pays his expenses.

This is the last Journal you will receive if you have not paid your current year's dues. You will be placed upon the suspended list and your legal protection is withdrawn during the period of your suspension. If you are in arrears, it behooves you to promptly make your remittance to your county secretary. Do it today. Delay may prove to be costly. Two members last year were unable to receive the services of the attorneys of our Legal Defense Committee because the action that was brought against them resulted from services rendered during a period of suspension. One of them had to employ his own attorney and paid out attorney fees of some \$800—just because he neglected to pay his dues. It may be you this year who will find himself without protection just because of neglect. Get under cover, Doctor.

Hygeia may be subscribed for at the following club rates:

10 or more subscriptions.....	\$2.30
25 or more subscriptions.....	2.00
50 or more subscriptions.....	1.75
100 or more subscriptions.....	1.50

Here's your opportunity for your society to place this journal in public reading places, factories and schools in your county.

Correspondence

TO ALL COUNTY SECRETARIES

Editor of the Journal of the Michigan State Medical Society.

As announced in a personal communication addressed to you a few weeks ago, the Council of the State Medical Society has arranged for a Conference of County Secretaries, to be held in Kalamazoo on April 16th.

The purpose of this conference is to provide an opportunity for all the County Secretaries to meet and discuss with each other and the officers of the State Society the problems that confront our profession and our organization. It is anticipated that such a discussion will lead to the adoption of a uniform plan of activity throughout the state that will be directed toward furthering those movements that are recognized as fundamental to future best interests of the public and of the profession. It is likewise anticipated that greater organized unity and effort will also result from a free and full discussion of the topics that are included in the prepared program.

The Secretaries are requested to reach Kalamazoo by noon on April 16. The Joint Committee on Public Health Education will hold its regular meeting at that hour and luncheon will be served during the meeting that will be held in the Burdick hotel. President Burton is chairman of the Joint Committee and he and

the Council are extremely desirous that each Secretary receive intimate information as to the work that is being done by this committee and the ends that are being sought. After the luncheon meeting the following program will be carried out:

1. Opening Remarks, J. B. Jackson, Chairman of the Council.
2. What Constitutes Interesting Programs for County Meetings, J. L. Squier, Secretary Calhoun County Society.
3. "Membership and Attendance Problems," W. G. Hoebeke, Secretary Kalamazoo County Society.
4. "Organizational Co-Operation," Olin West, Secretary American Medical Association.
5. "Medical Defense," Frank B. Tibbals, Chairman. Medico-Legal Committee.
6. Round Table Discussion, F. C. Warnshuis, State Secretary.

Under this heading opportunity will be given to discuss all the points raised in the preceding talks and any information that is sought will be imparted insofar as possible.

7. Resolutions.

As a County Secretary you are urged to make every effort to attend this Conference and participate in its deliberations. It is a duty that you owe to your local county society and to the profession. It is urged that you let nothing interfere that will prevent your being present.

J. B. JACKSON,
C. C. CLANCY.

A MOVIE FOR COUNTY MEETINGS

Secretaries' and program committees' attention is called to the following letter. This moving picture can be secured for your County meeting.—Editor. Editor of the Journal of the Michigan State Medical Society.

The government film, "The Diagnosis of Tuberculosis," is a medical film dealing with inspection, palpation, percussion, auscultation, and differential diagnosis. It was produced by the war department, and is the most authoritative film of its kind in this country.

As you know, the film was made in order to provide a standard for chest diagnosis to guide the thousands of physicians in the army who had been suddenly thrust into a routine and mode of procedure entirely foreign to their ordinary everyday life.

I am unable to obtain more detailed information than this regarding the film, and should appreciate any changes or additions which you may wish to make. I should like to receive from you a copy of the Journal in which the notation is to be made.

The film may be obtained by writing to the Michigan Tuberculosis Association, Lansing, Michigan. Since it is subject to recall at any time, it is advisable that any group desiring the use of this film make arrangements with the Association as soon as possible. An operator will also be provided, if necessary.

Yours very truly,
WM. T. WATSON,
Educational Director.

State News Notes

COLLECTIONS

Physicians' Bills and Hospital Accounts collected anywhere in Michigan. H. C. VanAken, Lawyer, 309 Post Building, Battle Creek, Michigan. Reference any Bank in Battle Creek.

Owing to illness in physician's family one of the finest general practices in Detroit will be sold. Cash income exceeds \$20,000 yearly. Location ideal. Equipment and furnishings the best. Competition negligible. Sale price at equipment invoice only is \$5,000. Included are all home furnishings in situ., valuable appointments and a thorough introduction. Packard coupe optional. Lady office assistant knows entire clientele and will remain if desired.

Fees are excellent. No night calls and no confinements except at hospital. Surgical field unlimited. Ideal place for country physician of personality and ability who wants a wider field.

This is a real opportunity. No answer desired unless you are a successful physician, can come and investigate and have the money.

Possession given anytime between May 1st and July 1st. C/O Journal.

\$12,000 Missouri Practice Free—Wonderful location—General practice—25 per cent collections. Good opening for small hospital. Overwork causes me to have to sacrifice proposition. Buy office effects and take location.—Address Journal.

NURSES' private home, invites convalescents and invalids; best of care, fine location. R. Rs. N. Y. C. and Interurban; best of references given. For particulars write Bessie Bileth, 566 Ely Street, Allegan, Mich.

DOCTOR WANTED for Lumber Company. Fine location. No opposition in 14 miles. Salary extra. Collections good. Write Physician, c/o Journal.

President Connor has appointed Dr. R. M. Kempton of Saginaw, Secretary of the Section on Pediatrics, succeeding Dr. Bliss of Kalamazoo. Dr. Bliss has taken up his residence in California.

Dr. and Mrs. A. W. Blain of Detroit are the parents of a newly arrived son, born February 7th, 1924.

On February 20th, 1924, Dr. Carl McClelland of Detroit gave a lecture under the auspices of the Central Committee on Health Education at Eaton Rapids. Dr. McClelland's subject was, "The Physiology of Sight and How to Prolong the Life of the Eye." The meeting took place in the high school before an audience of about 200.

On Monday, March 3rd, Dr. T. P. Clifford of Detroit was married to Miss Emma McCleary of Amsterdam, New York. Dr. Clifford and his bride will be back in Detroit the 1st of April.

Dr. W. H. Biebel of Detroit spent the month of March in the vicinity of St. Cloud, Florida.

Dr. Sam C. Hanna of Detroit enjoyed the last part of the winter in Los Angeles and Pasadena.

Dr. and Mrs. Claire L. Straith of Detroit have become the parents of a newly arrived daughter.

Dr. Walter Dumont of Ferndale was confined to Providence hospital, Detroit, with pneumonia during the early part of March, but we are glad to note his rapid convalescence.

Dr. and Mrs. C. D. Brooks of Detroit spent a week at Pinehurst early in March.

Doctors W. M. Marshall, F. B. Minor and M. S. Knapp of Flint attended the meeting of the Ameri-

can Congress of Internal Medicine at St. Louis, Mo. Dr. F. B. Miner received his Fellowship at this meeting.

Councillor H. E. Randall of the Sixth District has arranged for a district meeting at Flint, to be held April 16, 1924. An invitation is extended to physicians to attend. The following program has been prepared. Dr. Allen Kanavel of Chicago, will read a paper on "Infections of the Hand." Dr. Byfield of Chicago, will read a paper on, "Some Pitfalls in Diagnosis." Either Dr. Frank Tibbals, or Mr. Barbour of Detroit, will give a talk on Medico-legal subjects.

Dr. W. H. Marshall of Flint, addressed the Senior High students on "The Practice of Medicine as a Vocation."

Dr. C. H. O'Neil of Flint is spending the month at points in Florida.

Dr. J. W. Orr of Flint is expected home soon from Florida.

Dr. LeFevre of Muskegon will address the medical staff of Hurley hospital, Flint, some time next month.

President Guy L. Connor of Detroit and Dr. B. D. Harrison, Detroit, attended the Conference of Examining Boards and Council on Education that was held in Chicago, March 5th.

Dr. Dean Lewis of Chicago, addressed the Detroit Academy of Surgery on March 14. His subject was "General Infections."

The Kent County Medical Society conducted a public meeting on March 19th on the subject of cancer.

Mrs. J. B. Whinery, wife of Dr. J. B. Whinery, Grand Rapids, died on March 14th. The sympathies of the profession is extended to Dr. Whinery in his bereavement.

Dr. E. S. Browning, Grand Rapids, announces that he has limited his practice to urology.

Dr. Alfred W. Warthin, Ann Arbor, was elected vice-president of the American College of Physicians at the St. Louis meeting. Dr. Warthin was also selected as editor-in-chief of the Annals of Clinical Medicine, the official publication of the College of Physicians.

Dr. E. C. Warren and Dr. C. A. Stewart, Bay City, have returned from a month's sojourn at Miami, Florida.

Dr. D. Emmett Welsh, Grand Rapids, has returned from a two months' outing in Florida and Cuba.

Appointment of staff officers and reorganization of the hospital into four departments with various divisions, each headed by a chairman, were announced by the board of trustees of Blodgett Memorial hospital, Grand Rapids.

Dr. Thomas C. Irwin was named chief of staff and Dr. Henry J. Pyle, vice chief of staff. Dr. Charles E. Hooker was appointed secretary of staff.

Members of the hospital executive committee were named as follows: Dr. Richard R. Smith, representing the department of surgery; Dr. Thomas DeWitt

Gordon, department of medicine; Dr. Alexander N. Campbell, department of obstetrics; Dr. F. N. Smith, department of oto-laryngology, and Dr. B. M. Morrill, superintendent of the hospital.

Division chairmen and the divisions they will head were designated as follows: Dr. H. J. Vandenberg, surgery; Dr. John T. Hodgen, orthopedics; Dr. J. R. Coryell, urology; Dr. Reuben Maurits, anaesthesia; Dr. William Northrup, medicine; Dr. Collins H. Johnston, pediatrics; Dr. William McKay German, pathology; Dr. Charles E. Hooker, dermatology; Dr. P. J. DePress, neuro-psychiatry; Dr. T. O. Menees, laboratory; Dr. F. N. Smith, oto-laryngology; Dr. Francis J. Lee, gynecology; Dr. Elton P. Billings, obstetrics; Dr. C. E. Beeman, ophthalmology, and Dr. Wilhelmina Yeretsky, dentistry.

POST-GRADUATE CLINIC TOUR

Interstate Post-Graduate Clinic Tour to Canada, British Isles and Paris in 1925 is now being arranged under the supervision of the managing-director's office of the Tri-State District Medical Association. The time for leaving will be about the middle of May. The tour will consume approximately two months' time and the total cost from Chicago and back to Chicago again will be less than \$1,000. This will include all clinic arrangements and admissions and all traveling expenses, except meals on Pullmans in America and tips on the ocean steamer. First-class hotels will be used everywhere and the ocean passage will be on the largest and finest of the new one cabin ships.

Clinics are being arranged in Dublin, Belfast, Liverpool, Manchester, Leeds, Edinburgh, Glasgow, Newcastle, London and Paris and other points of clinical interest. The clinics will be conducted by the leading clinicians of these cities. The opportunity will be given, subsequently, to visit the clinic centers in other parts of Europe.

This tour is open to members of the profession who are in good standing in their state or provincial societies, and their families and friends.

Sight-seeing programs will be arranged practically every day abroad, including the most scenic part of the countries visited, without extra cost.

On account of the great demand for reservations, applications should be made as early as possible to Dr. William B. Peck, managing-director, Freeport, Illinois. Preference in the assignment of hotel and steamship accommodations will follow the order in which the applications are received.

Deaths

Dr. Morton Gallagher died at his home in Bay City, February 14th, of chronic nephritis. Dr. Gallagher was in his sixty-first year.

He had been active in the Bay County Society, civic affairs and the Masonic order.

The death of Dr. H. R. Pearce of Battle Creek on October 27, 1923, has been reported. The doctor was born in Toronto, Canada, in 1866, and was a graduate of the University of Toronto. He had practiced in Battle Creek and vicinity for about 28 years.

MEDICAL PREJUDICES

There are people who would rather have a hundred rats or dogs saved the pain of vivisection than to have a million human lives saved from

disease and suffering through the experiment. Organized into leagues, and appealing subtly to tender emotions and sentiments, they have proved a serious obstacle at times to the advancement of medical science. Similarly, organizations have been formed in the United States to oppose vaccination on the ground of personal liberty—as opposed to the public health. Other societies strive to lower the standards of medical education.

With Charles W. Eliot, Charles Evans Hughes, Bishop Mann and Cardinal O'Connell among its leaders, a backfire against this propaganda has been started in the form of the Society of Friends of Medical Progress.

Its aims will be to encourage and aid all research and humane experimentation for the advancement of medical science; to inform the public of the truth concerning the value of scientific medicines to humanity and to animals; and "to resist the efforts of the ignorant or fanatical persons or societies constantly urging legislation dangerous to the health and well being of the American people."

Laymen—not doctors—will form the membership bulwark of this society of intelligence, on the excellent ground, as expressed by the Journal of the American Medical Association, that "intelligent laymen are quite as responsible for public security as are the members of the medical profession." Science in medicine has always fought its way successfully against ignorance of medical knowledge and prolongation of human life has been astonishing in spite of obstacles; but progress, while it cannot be halted, can be slowed to the detriment of national health by mistaken opposition.

Anything which tends to spread among the people the facts of the triumph of medical advance through scientific experiment, and of its effect in lightening the burdens of many millions of lives, is worth indorsement. It speeds the time when science will not have to combat the uniformed mind of the man whose body it may later have to save.—G. R. Press.

FIND TELEPHONES TO BE FREE FROM GERMS

Do public telephones sometimes make you shudder and think of germs?

Well, they need not, if one places faith in the results of a recent investigation in London, told of in the April issue of the popular health journal, *Hygeia*.

To learn if public telephones are carriers of disease, says the health magazine, the British postmaster-general recently had a series of tests made with telephone mouth pieces at busy call offices. No tuberculosis germs were found.

Not satisfied with the tests made at the public pay stations, the postmaster-general had telephones fitted in the wards of a sanatorium to be used only by patients in different stages of tuberculosis.

These instruments were in use for varying periods and were not cleaned or disinfected during the time of the experiment. Bacteriologists then inspected them and found no evidence of bacilli. The conclusion was that the transmission of tuberculosis through the telephone mouthpiece was so unlikely as to be almost impossible.

However, in London a staff of cleaners is employed permanently whose duty it is to disinfect telephone transmitters and receivers in all the public call stations regularly every three days.

DON'T WORRY IF YOU CAN'T SLEEP NIGHTS

To make a business of sleep is a bad habit. That is what persons do who worry because they can't sleep.

In answering a question about insomnia, Hygeia, the popular health magazine, in its April issue declares that the chief harmful effects from not sleeping are caused not by sleeplessness, but by worry over not sleeping.

Sleep should and will come naturally, if one will only realize that it is rest and not sleep that is needed, says the health journal.

Of course, it is important to pay attention to the ordinary rules of hygiene, with regard to exercise, fresh air and reasonable diet. But above all, it is important to fill one's life with satisfactory work and play.

The best incentive to sleep is still the feeling of "something attempted, something done," particularly something to help others.

As to the amount of sleep needed by different persons, that varies within wide limits and is much modified by habit. Many energetic, active indopmaster-general recently had a series of tests hours of sleep. The proper amount for the average adult, however, is usually between seven and eight hours.

County Society News

GENESEE COUNTY

MINUTES

January 23, 1924, Genesee County Medical Society met for noon luncheon at the Hotel Dresden.

Speaker—Dr. F. Kidner, Detroit, Mich.

Subject, "Fractures of the Femur."

February 6, 1924, Genesee Medical Society met for noon luncheon at the Hotel Dresden.

Speaker—Dr. Cooley, Detroit, Mich.

Subject, "Prophylaxis of Heart Disease in Children."

At this meeting the question of holding a joint meeting between Bay, Saginaw and Genesee County Medical Societies was considered. The date set was April 16, 1924.

February 20, 1924, Genesee County Medical Society met for noon luncheon at the Hotel Dresden.

Speaker—Dr. H. K. Shawn, Detroit, Mich.

Subject—"Diseases of the Breast."

March 5, 1924, Genesee County Medical Society met for noon luncheon at the Hotel Dresden.

Speaker—Dr. W. D. Mayer, Detroit, Mich.

Subject, "Thrombo-Angitis-Obliterans."

George J. Curry, Secretary.

HOUGHTON COUNTY

The Houghton County Medical Society met at its regular meeting at the Douglas House, Houghton, Mich., March 4, 1924, with twenty-two members present. There were also as guests of the Medical Society, supervisors, superintendents of the public schools and others interested in public health work. Dinner was served at six o'clock, after which the following program was carried out:

Dr. R. M. Olin was unable to be present, so Dr. R. B. Harkness, a member of the State Board of Health, gave the complete figures of the recent goitre

survey in Houghton County. The entire subject of goitre in all its relations was thoroughly covered by the papers presented and the discussion of same. Four counties were selected by the State Board of Health for the recent goitre survey, being Midland, Wexford, Macomb and Houghton. Out of 13,820 school children examined in Houghton County, 64.4 per cent had goitres; 6,860 boys and 6,865 girls. The ages of occurrence of the boys were 9 to 12, and girls 12 to 13. It has been found on examination of the water in various parts of Houghton county that it contains practically no iodine. It has already been proven by the work of Kimball and Marine that if we supply a small amount of iodine, these goitres can be reduced or prevented. Several means to supply this to the children, either in the form of tablets or in table salt, are being considered by the State Board of Health. The several types of goitre were presented by Dr. Harkness and examined by those present. The "Pathology of Goitre" was taken up by Dr. A. LaBine; "Metabolism in Goitre," by Dr. S. Levine; "Heart in Goitre," by Dr. P. Bourland; "Goitre in Pregnancy," by Dr. A. D. Aldrich; "Surgery of Goitre," by Dr. H. M. Joy. A very free discussion of the entire subject by the physicians and laymen present followed.

It was decided at the business session of this meeting that I, as Secretary, would attend the conference of County Secretaries in Kalamazoo, April 16. Kindly furnish me with full details of this meeting so that I may make my arrangements to attend.

The application of Dr. K. C. Becker of Baltic, Mich., was received and referred to the Board of Censors.

The very kind offer of Dr. E. W. Smith of Neopit, Wis., offering his farm and land in Florida for a winter home for the Houghton County Medical Society was referred to the committee, consisting of Dr. Bourland, Dr. Moore, and Dr. Scallon for further investigation.

There was a motion made that the Secretary report to the Prosecuting Attorney of Houghton County the case of the death of Edward Hecker of Houghton, of diphtheria, a case of neglect and the use of Christian Science practitioner. I shall furnish the Journal with further details of this case after the investigation.

A very interesting letter was read from Dr. A. S. Warthin of Ann Arbor, Michigan, on the question of goitre.

It is our intention in the very near future to mail to you the papers on the above subject which were read at this meeting.

G. S. Stewart, M. D., Secretary.

WASHTENAW COUNTY

I note that I have failed to give you earlier notice of change of officers for the Washtenaw County Society since January. Our president is Dr. Theron S. Langford. The Secretary remains the same. I am sure you will wish to make that change in the list of officers as given in the Journal.

Our Society has been having monthly meetings since January, instead of the meetings four times a year, as previously. At our last February meeting we had a report of an unusual case of a death caused by the presence of a darning needle transfixing the medulla, given by Dr. G. S. Weller. The occurrence of the case can be best explained only as a very unusual accident. At the same meeting Dr. Olin presented the results of his very interesting study of relation between iodine content of drinking water and the presence of goitre among school children in Michigan.

Yours very truly,

W. E. Forsythe, M. D., Sec'y-Treas.